

EXHIBIT 1

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

HAMMOND DEVELOPMENT INTERNATIONAL, INC.,
Patent Owner.

IPR2020-00081
Patent 10,270,816 B1

Before MICHELLE N. WORMMEESTER, AMBER L. HAGY, and
KRISTI L. R. SAWERT, *Administrative Patent Judges*.

SAWERT, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1–30 (“the challenged claims”) of U.S. Patent No. 10,270,816 B1 (Ex. 1001, “the ’816 patent”). We have jurisdiction under 35 U.S.C. § 6 and enter this Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth below, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1–13 and 20–30 are unpatentable, but that Petitioner has not shown, by a preponderance of the evidence, that claims 14–19 are unpatentable. *See* 35 U.S.C. § 316(e).

II. BACKGROUND

A. Procedural History

Google LLC (“Petitioner”) filed a petition for *inter partes* review under 35 U.S.C. § 311. Paper 1 (“Pet.”). Petitioner supported its Petition with the Declaration of Stuart J. Lipoff.¹ Ex. 1021.

Hammond Development International, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). Pursuant to 35 U.S.C.

¹ With the Board’s approval, after our Institution Decision, Petitioner substituted the Declaration of Stuart J. Lipoff (Ex. 1021) for the declaration of Petitioner’s original expert, Leonard Forys (Ex. 1003), while maintaining the identical substantive content of the original declaration. Per our Order granting authorization for the substitution, we consider cites to the original declaration in the Petition and other filed documents to refer to the substitute declaration. *See* Paper 18, 5. Therefore, we refer herein to Ex. 1021 instead of to Ex. 1003 as originally cited in the Petition.

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§ 314, we instituted an *inter partes* review of all challenged claims on all grounds presented in the Petition:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–6, 11–13	103(a) ²	Gilmore, ³ Dhara, ⁴ Dodrill ⁵
14, 16	103(a)	Gilmore, Creamer ⁶
15	103(a)	Gilmore, Creamer, Dhara
7, 8	103(a)	Gilmore, Dhara, Dodrill, Creamer
17	103(a)	Gilmore, Creamer, Fawcett ⁷
18	103(a)	Gilmore, Creamer, Dodrill
9, 10, 29, 30	103(a)	Gilmore, Dhara, Dodrill, Ladd ⁸
20, 22, 23, 25–28	103(a)	Gilmore, Dodrill, Ladd
24	103(a)	Gilmore, Dodrill, Ladd, Fawcett
19	103(a)	Gilmore, Creamer, Dodrill, Ladd
21	103(a)	Gilmore, Dodrill, Ladd, Patel ⁹

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the '816 patent claims priority to an application that has an effective filing date before this date, the pre-AIA version of § 103 applies.

³ Gilmore, et al., U.S. Pat. Pub. No. 2003/0216923 A1, published Nov. 20, 2003 (Ex. 1005, “Gilmore”).

⁴ Dhara, et al., U.S. Pat. Pub. No. 2003/0202504 A1, published Oct. 30, 2003 (Ex. 1009, “Dhara”).

⁵ Dodrill, et al., U.S. Pat. No. 6,766,298 B1, issued July 20, 2004 (Ex. 1006, “Dodrill”).

⁶ Creamer, et al., U.S. Pat. Pub. No. 2004/0122941 A1, published June 24, 2004 (Ex. 1010, “Creamer”).

⁷ Fawcett, et al., U.S. Pat. No. 5,802,526, issued Sept. 1, 1998 (Ex. 1017, “Fawcett”).

⁸ Ladd, et al., U.S. Pat. No. 6,269,336 B1, issued July 31, 2001 (Ex. 1016, “Ladd”).

⁹ Patel, et al., U.S. Pat. Pub. No. 2006/0256950 A1, published Nov. 16, 2006 (Ex. 1007, “Patel”).

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Paper 8 (“Institution Decision” or “Inst. Dec.”).

Patent Owner filed a Response. Paper 20 (“PO Resp.”). Patent Owner supported its Response with the Declaration of Dr. Vernon Thomas Rhyne, III. Ex. 2029. Petitioner filed a Reply to Patent Owner’s Response. Paper 24 (“Reply”). Patent Owner filed a Sur-reply. Paper 32 (“Sur-reply”).

An oral hearing was held on March 9, 2021. A copy of the transcript is included in the record. Paper 35 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies Google LLC as the real party in interest. Pet. 80. Patent Owner identifies Hammond Development International, Inc., as the real party in interest. Paper 4, 2.

C. Related Matters

Petitioner and Patent Owner both state the ’816 patent has been asserted by Patent Owner in *Hammond Development International, Inc. v. Google LLC*, No. 6:19-cv-00356 (W.D. Tex.) and in *Hammond Development International, Inc. v. Amazon.com, Inc.*, No. 6:19-cv-00342 (W.D. Tex.). Pet. 81; Paper 31, 2. According to Patent Owner, these judicial proceedings have been consolidated and are currently stayed. Paper 31, 2. In addition to the present proceeding, the ’816 patent is also the subject of a pending *inter partes* review proceeding brought by petitioner Amazon.com, Inc. (“Amazon”) in IPR2020-01067.

Petitioner also states that “[t]he ’816 patent is part of a family of patents that claim priority to U.S. Patent No. 9,264,483 [B2 (the ’483 patent)].” Pet. 81. Petitioner sought an *inter partes* review of the ’483 patent in IPR2020-00020 (the “020 IPR”). *Id.* We issued a Final Written Decision in the 020 IPR on April 12, 2021. 020 IPR, Paper 38. The ’483 patent was also the subject of an *inter partes* review in IPR2020-00460 (the

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“460 IPR”), brought by Amazon. On May 4, 2021, we issued a Judgment granting Patent Owner’s request for adverse judgment after institution of trial and canceling all claims of the ’483 patent. 460 IPR, Paper 34, 3.

Related U.S. Patent 10,264,032 B1 was also the subject of two *inter partes* review proceedings: IPR2020-00080 (Petitioner Google) (the “080 IPR”) and IPR2020-01029 (Petitioner Amazon) (the “1029 IPR”). Pet. 81; Paper 31, 2–3. We issued a Final Written Decision in the 080 IPR on April 21, 2021. 080 IPR, Paper 38. We also issued a Judgment granting Patent Owner’s request for adverse judgment after institution of trial and canceling all claims of the ’032 patent on May 10, 2021. 1029 IPR, Paper 19, 3.

Finally, Petitioner states that pending U.S. Patent Application No. 16/389,170 “is part of the ’816 patent family.” Pet. 81.

D. The ’816 patent (Ex. 1001)

The ’816 patent, titled “Method and System for Enabling a Communication Device to Remotely Execute an Application,” issued April 23, 2019, based on an application filed November 16, 2018. Ex. 1001, codes (22), (45), (54). The ’816 patent claims priority, through a chain of continuation applications, to the ’483 patent. *Id.* at code (63).

The ’816 patent describes a communication system that establishes a communication session between a client device and a remote application server, which executes an application for the client, e.g., the remote application server “execut[es] an application for a thin-client device.” *Id.* at 2:1–5, 2:45–57. Figure 1D of the ’816 patent, reproduced below, shows an embodiment of a communication system.

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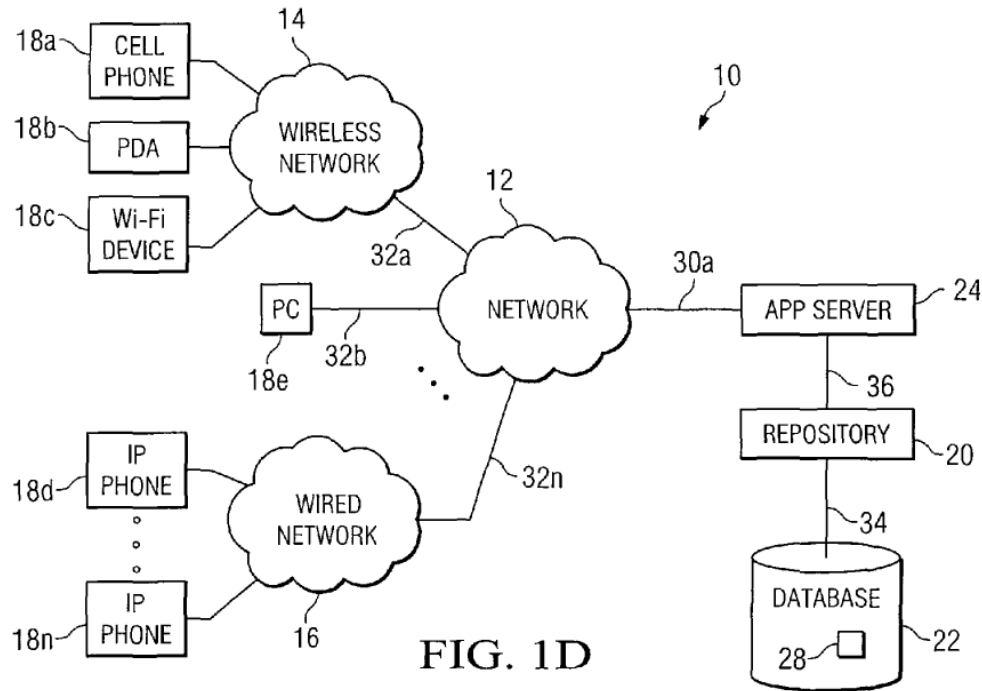


Figure 1D shows a block diagram of a communications system and associated components. Ex. 1001, 2:65–67.

As shown in Figure 1D, “clients 18a–18n . . . couple to network 12 through one or more communications links 32 and/or one or more networks 14, 16.” *Id.* at 4:7–9.¹⁰ Additionally, “application servers 24 couple to network 12 through one or more communications links 30.” *Id.* at 3:56–57. Further, repository 20 and application server 24 are connected via “a direct communication link 36.” *Id.* at 11:1–3.

The communication system of the ’816 patent “enables a client 18 to have one or more applications 28 executed remotely” by the application server 24. *Id.* at 6:13–18. A user of the client “initiates an information collection and/or retrieval process by communicating a request to application server 24.” *Id.* at 6:16–18; *see also id.* at 5:50–52 (“In some embodiments,

¹⁰ All bolding of reference numbers has been omitted in material quoted herein from the ’816 patent and the prior-art references.

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clients 18 can be configured to initiate a connection with repositories 20 and/or application servers 24.”), 2:14–17 (“At least one of the one or more communication devices is operable to communicate a request to establish a communication session.”). After that, “application server 24 notifies repository 20 that a communication session with client 18 has been requested.” *Id.* at 6:40–42. “Repository 20 . . . operates to identify a desired application 28 and to communicate application 28, or portions thereof, to application server 24 for execution.” *Id.* at 6:42–45. Further, “[u]pon receipt of application 28, application server 24 executes application 28 and begins a communication session with client 18a.” *Id.* at 6:45–47. In particular, “application server 24 begins the process of communicating information to and/or retrieving information from client 18a” by “requesting that the user of client 18a respond to a series of queries associated with application 28.” *Id.* at 6:47–49, 7:6–12. For example, application server 24 executes an application based on voice extensible markup language (Voice XML) that “enables application server 24 to interact with and collect information from client 18a.” *Id.* at 6:50–53. “[A]pplication server 24 communicates information relating to portions of Voice XML-based code to client 18a for execution on client 18a,” e.g., “by requesting that the user of client 18a respond to a series of queries associated with application 28.” *Id.* at 7:6–12. The “user of client 18a responds to each of the series of queries by ‘speaking’ a response to each query communicated to client 18a for execution.” *Id.* at 7:16–19.

E. Illustrative Claims

Of the challenged claims, claims 1, 14, 20, and 29 are independent. Claims 2–13 depend, directly or indirectly, from claim 1; claims 15–19 depend, directly or indirectly, from claim 14; and claims 21–28 depend,

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directly or indirectly, from claim 20; and claim 30 depends from claim 29.

Claims 1, 14, 20, and 29, reproduced below, illustrate the claimed subject matter¹¹:

1. [1preamble] A communication system comprising:
 - [1a] an application server coupled to a first communication link and coupled to a second communication link, the first communication link and the second communication link each comprising a data connection,
 - [1b] the application server adapted to establish a communication session with at least one communication device coupled to the first communication link in response to a request from the at least one communication device to establish the communication session,
 - [1c1] wherein the application server comprises a voice processing software program and
 - [1c2] the request from the at least one communication device comprises packetized voice data;
 - [1d] a repository having access to an application comprising at least a portion of computer code;
 - [1e] wherein the application server is either (a) configured to receive the application via the second communication link, or (b) configured to cause an execution of the application via the second communication link;
 - [1f] wherein the application server is configured to execute or cause the execution of the application remote from the at least one communication device;
 - [1g] wherein the voice processing software program is configured to generate a voice representation of information derived from the application;

¹¹ We have added numbering to the elements in keeping with the numbering used by the parties. *See* Pet. ii–x; Ex. 2001 (App. of Challenged Claims).

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[1h] wherein the application server is configured to transmit the voice representation and a request for processing service over the first communication link to the at least one communication device; and

[1i] wherein the request for processing service comprises an instruction to present a user of the at least one communication device the voice representation.

Ex. 1001, 13:38–14:3.

14. [14preamble] A communication system, comprising:

[14a] a plurality of application servers;

[14b] a first communication link coupled to the plurality of application servers, the first communication link comprising a data connection;

[14c] a first one of the plurality of application servers configured to execute a first application to establish a communication session with at least one communication device coupled to the first communication link in response to a request from the at least one communication device to establish the communication session;

[14d] a second one of the plurality of application servers coupled to a second communication link, the second one of the plurality of servers either (a) configured to receive a second application from at least one repository having a database maintaining the second application over the second communication link, or (b) configured to cause an execution of the second application via the second communication link;

[14e] wherein the second communication link comprises a data connection;

[14f] wherein the second one of the plurality of application servers is configured to execute or cause the execution of the second application remote from the at least one communication device;

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[14g] wherein at least one of the plurality of application servers is configured to communicate a request for processing service to the at least one communication device; and

[14h] wherein the request for processing service is communicated to the at least one communication device over the first communication link.

Id. at 14:47–15:10.

20. [20preamble] An interactive, voice-based communication system, comprising:

[20a] at least one application server coupled to a first communication link and coupled to a second communication link, the first communication link and the second communication link each comprising a data connection,

[20b] the at least one application server operable to establish a communication session in response to a request from at least one communication device;

[20c] at least one repository coupled to the second communication link, the at least one repository either (a) configured to transmit at least one portion of an application to the at least one application server, or (b) configured to execute the at least one portion of the application;

[20d] wherein the communication session comprises an exchange of packetized voice data from the at least one communication device and packetized voice data or audio data from the at least one application server;

[20e] wherein the at least one application server comprises a first voice recognition application, a speech-to-text application, and a text-to-speech application;

[20f] wherein the first communication link comprises the Internet; and

[20g] wherein the at least one portion of the application is maintained in the at least one repository or a database coupled to the at least one repository.

Id. at 15:30–55.

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29. [29preamble] A method of providing responses in an interactive, voice-based communication system, comprising:

[29a] receiving, by at least one application server over a first communication link, a request from at least one communication device, wherein the request comprises packetized voice data;

[29b] translating, by the at least one application server, the packetized voice data to a text representation using a first application;

[29c] identifying, by the at least one application server or at least one repository coupled to the at least one application server, a second application to be executed in response to the request using the text representation;

[29d] executing at least one portion of the second application;

[29e] transmitting, by the at least one application server, packetized voice or audio data to the at least one communication device, the packetized voice or audio data responsive to the request;

[29f] wherein the first communication link comprises a data connection;

[29g] wherein the first communication link further comprises the Internet; and

[29h] wherein the at least one portion of the second application is maintained in the at least one repository or a database coupled to the at least one repository.

Id. at 16:31–55.

III. ANALYSIS

We have reviewed the parties' respective briefs as well as the relevant evidence discussed in those papers. For the reasons discussed in detail below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–13 and 20–30 of the '816 patent are unpatentable under 35 U.S.C. § 103 as having been obvious, but that Petitioner has not

shown by a preponderance of the evidence that claims 14–19 are unpatentable.

A. Principles of Law

To prevail in its challenges to the patentability of all claims of the '816 patent, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d) (2019). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015); *see also In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1375–78 (Fed. Cir. 2016) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable for obviousness if, to one of ordinary skill in the pertinent art, “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made.” 35 U.S.C. § 103(a) (2006); *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of

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nonobviousness.¹² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). A petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *Magnum Oil*, 829 F.3d at 1380. Moreover, a decision on the ground of obviousness must include “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

We analyze Petitioner’s asserted grounds of unpatentability in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

We consider the asserted grounds of unpatentability in view of the understanding of a person of ordinary skill in the art and, thus, begin with the level of ordinary skill in the art. The level of ordinary skill in the art is “a prism or lens through which . . . the Board views the prior art and the claimed invention” to prevent hindsight bias. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Relying on the declaration testimony of Mr. Lipoff, Petitioner contends that a person of ordinary skill in the art of the ’816 patent “would have at least a bachelor’s degree in Computer or Electrical Engineering, Computer Science, or equivalent engineering discipline, and approximately three years’ experience working on remotely-processed applications and data networking, including voice-related applications and voice-over packet technologies.” Pet. 5 (citing Ex. 1021 ¶ 50).

¹² The parties do not direct our attention to any evidence of objective indicia of nonobviousness.

Patent Owner disagrees with Petitioner's characterization of an ordinarily skilled artisan and argues that "a person of ordinary skill in the art of the '816 patent at the time of invention would have had at least a bachelor's degree in Computer or Electrical Engineering, Computer Science, or equivalent discipline, and approximately one to two years of work experience in data networking." PO Resp. 22. Patent Owner further argues that "the level of ordinary skill is not a rigid formula," and that "[m]ore education with less experience or more experience with less formal education could equally qualify an individual" as an ordinarily skilled artisan. *Id.* (citing Ex. 2029 ¶ 41). Patent Owner's proposed level of skill thus includes fewer years of work experience, but in only "data networking" (as opposed to Petitioner's definition, which requires work experience on both remotely-processed applications and data networking), and Patent Owner urges a less rigid requirement.

To the extent necessary herein, we apply Patent Owner's definition of the level of ordinary skill in the art, as we did in the Institution Decision. Inst. Dec. 12–14. We determine the definition offered by Patent Owner is consistent with the teachings of the '816 patent and the prior art of record. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (noting that the prior art itself may reflect an appropriate level of skill in the art). We note, however, that neither party explains how the differences in the parties' competing proposals are material to the issues before us. We further note that our adoption of Patent Owner's proposed definition does not reflect a view that adopting Petitioner's competing definition of the level of ordinary skill in the art would have any impact on the outcome of this proceeding. To the contrary, our fact findings would be the same under either party's definition.

C. Claim Construction

In interpreting the claims of the '816 patent, we “us[e] the same claim construction standard that would be used to construe the claim[s] in a civil action under 35 U.S.C. [§] 282(b).” *See* 37 C.F.R. § 42.100(b). The claim construction standard includes construing claims in accordance with the ordinary and customary meaning of such claims as would have been understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc).

We did not expressly construe any terms in our Institution Decision, in part because neither party presented any terms expressly for construction. Inst. Dec. 16; *see also* Pet. 5; Prelim. Resp. 30–31. We did, however, address, within the context of our obviousness analysis, the parties’ apparent dispute regarding the term “establish the communication session.” Inst. Dec. 14–15, 29–34. We advised that “the parties may wish to further develop the record at trial as to how an ordinarily skilled artisan, at the time of the invention, would have interpreted ‘communication session’ and would have understood when a ‘communication session’ is ‘established,’ in light of the disclosure of the '816 patent.” *Id.* at 15; *see also id.* at 33–34.

In its Response, Patent Owner takes issue with Petitioner’s position that no claim terms need to be construed. PO Resp. 15–16; *see also* Pet. 5. Specifically, Patent Owner argues that Petitioner “sought specific constructions for *ten* terms from the '816 patent” in the co-pending district court litigation, but none in this proceeding, and suggests that Petitioner’s failure to offer the same constructions here means that Petitioner has failed to satisfy its obligations in this proceeding. PO Resp. 16. We disagree. Although Patent Owner is correct that the same claim construction standards

apply to this proceeding as to the district court proceeding, the common standard does not mandate that all claim construction disputes submitted to the district court must also be aired here. Rather, “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (*citing Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Patent Owner then argues that the Board should adopt the same constructions adopted by the district court for several terms of the ’816 patent, PO Resp. 17–20, and also proposes a construction for one other term not construed by the district court, *id.* at 20–21. We address those terms below.

1. “request . . . to establish the communication session”

Independent claims 1 and 14 recite a “request from the at least one communication device to establish the communication session.” Ex. 1001, 13:46–47 (claim 1), 14:56–57 (claim 14). In our Institution Decision, we noted an apparent dispute between the parties over whether a telephone call to a host system was a “request” to “establish the communication session,” as Petitioner argued, or was itself sufficient to actually establish such a session, as Patent Owner argued in its Preliminary Response. Inst. Dec. 29–34 (citing Pet. 13–15 (arguing that the phone call in Gilmore is merely a request, and the communication session is thereafter established by the gateway executing an interactive voice application), Prelim. Resp. 38 (arguing, in describing Gilmore’s teachings, that “dialing a telephone number is not a request to establish a communication session; rather, it is

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itself the establishment of a call session”)¹³). We preliminarily determined, for purposes of our Institution Decision, that “an ordinarily skilled artisan would have understood that a communication device placing a telephone call to a voice response system . . . does not itself ‘establish’ a communication session, but rather is a ‘request’ to establish such a session.” Inst. Dec. 34. We further noted that “the parties may wish to develop the record further at trial as to how an ordinarily skilled artisan, at the time of the invention, would have interpreted ‘communication session,’ and would have understood when a ‘communication session’ is ‘established,’ in light of the disclosure of the ’816 patent.” *Id.* at 35–36.

In its Response, Patent Owner states the district court determined the phrase “request . . . to establish [a/the] communication session” should be “given its plain and ordinary meaning,” but “the request must occur *before* the establishment of the communication session.” PO Resp. 17 (emphasis added) (quoting Ex. 2009, 1). Patent Owner does not, however, further address the construction of this entire term. Instead, Patent Owner focuses its evidence and arguments on what it deems the characteristics of a “communication session,” while acknowledging that neither party requested the district court to construe “communication session.” *Id.* at 17–19.

In particular, Patent Owner argues, relying on the testimony of Dr. Rhyne, that the ordinarily skilled artisan would have understood that a “communication session” in the context of the ’816 patent “has certain characteristics.” *Id.* at 17. Namely, according to Patent Owner, a

¹³ Patent Owner now argues that we misunderstood Patent Owner’s arguments from the Preliminary Response, and that what Patent Owner argued was that “a phone call (or ‘call session’) is not a communication session.” PO Resp. 41–42 (emphasis omitted).

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communication session “(a) is a ‘session’ with a beginning and an end (b) that is the result of a *processed request* and (c) that includes an exchange of information (d) between an application server and (e) a client device (f) *over a data connection*.” *Id.* at 17–18 (emphases added) (footnotes omitted) (citing Ex. 2029 ¶ 51). Patent Owner further argues that, “[a]t its most essential, the ‘communication session’ of the ’816 patent is a temporary information exchange between computing devices over a data connection in response to a request from a client device.” *Id.* at 18. Patent Owner then argues that, accordingly, a “communication session” as claimed by the ’816 patent “is *not* satisfied by a mere telephone call.” *Id.* at 19 (citing Ex. 2029 ¶ 52).

Petitioner responds that Patent Owner “does not argue that its [narrower construction or additional requirements] are material to patentability, . . . so the Board need not address them.” Reply 5–6. Petitioner then counters Patent Owner’s asserted characteristics of a communication session, contending, among other things: (1) a “computing device” is not required for the client device because the ’816 patent describes communication sessions over a telephone network, *id.* at 6 (citing Ex. 1001, 3:61–4:6, 5:64–6:7); and (2) construing a “communication session” as being “in response to a request from a client device” would be redundant of other limitations in the claims, *id.* at 7. Petitioner notes the ’816 patent describes a “communication session” as “the process of communicating information to and/or retrieving information from client 18a,” and “enabl[ing] application server 24 to interact with and collect information from client 18a” through, for example, queries to and responses from a user. *Id.* at 7–8 (quoting Ex. 1001, 6:45–53, 7:6–19; citing *id.* at 5:59–64 (alteration in original)).

In its Sur-reply, Patent Owner argues that it proposed to the district court, and now advocates here, that the “communication session” terms carry their “plain and ordinary meaning.” Sur-reply 6–7. Patent Owner then reiterates its position that “the telephone call of *Gilmore* cannot be a communication session” because a “computing device” is required for the client device, as illustrated by the district court’s construction of a different term—“request for processing service.” *Id.* at 7–9. Patent Owner further argues that, because a request to establish a communication session must occur *before* the communication session is established, a session cannot be established *until the request is processed*. *Id.* at 9–10.

The parties’ arguments post-institution do not reveal a material dispute over the construction of the term “communication session” itself. Rather, the parties’ disputes hinge on different claim terms, including “request for processing service.” *See, e.g.*, PO Resp. 20–21; Reply 9–11; Sur-reply 8–13. We address that construction below. To the extent necessary, we construe a “communication session,” consistent with the disclosure of the ’816 patent, as the process of a communication device communicating information to, and/or retrieving information from, another communication device. *See* Ex. 1001, 6:47–49.

We determine that we need not further construe this term to resolve the parties’ disputes herein; rather, as noted, the parties’ disputes invoke additional terms, which we address below.

2. “request for processing service”

Independent claims 1 and 14 recite that the communication device receives a “request for processing service” from the application server, and further recite “wherein the request for processing service comprises an instruction to present a user of the at least one communication device the

voice representation.” Ex. 1001, 13:64–14:3, 15:5–7. Claim 26, which depends indirectly from independent claim 20, similarly recites that the communication device receives a “request for processing service” from the server, and further recites that the request is part of “at least one instruction transmitted by the at least one server to the at least one communication device.” *Id.* at 16:7–11. We first summarize the parties’ positions, then turn to our analysis of this term.

a) The parties’ positions

Patent Owner addresses “request” separately from “processing service.” See PO Resp. 19 (“processing service[]” terms), 20–21 (“request”). As to the term “request,” Patent Owner acknowledges that the parties did not ask the district court to construe that term, but argues that it should be afforded its “plain and ordinary meaning.” *Id.* at 20. According to Patent Owner, the plain and ordinary meaning of “request” in the context of the ’816 patent is “an action at the computer-code-instruction level.” *Id.* As support, Patent Owner quotes several passages from the written description of the ’816 patent that Patent Owner argues “make[] clear that the ‘requests’ in the ’816 patent are instructions that must be processed or handled by system components.” *Id.* at 21–23 (citing Ex. 1001, 6:16–18, 7:47–49, 7:66–8:4, 8:31–34, 9:1–3, 12:64–13:3; Ex. 2029 ¶ 53).

In its Reply, Petitioner contends that “[t]he plain meaning of ‘request’ is an ‘act or an instance of asking for something’ or ‘the state of being sought after.’” Reply 9 (quoting Ex. 1024, 3). Petitioner contends that the district court rejected Patent Owner’s construction of “request” as “an action at the computer-code-instruction level” when the district court construed

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“terms including ‘request’ as [having their] plain meaning.” *Id.* (citing Ex. 2009, 1–2).

As to “processing service,” Patent Owner argues that the district court construed that term as “a computing process performed by a communication device for all or part of the application.” PO Resp. 19 (quoting Ex. 2009, 2). Patent Owner contends “[t]his is an important construction because it recognizes that the ’816 patent recites a communication device that processes instructions sent by an application server.” *Id.* Petitioner, on the other hand, “maintains that claim construction is not necessary,” but contends that “the Petition shows unpatentability under both [Patent Owner’s] and the district court’s constructions.” Reply 11 (citing Pet. 31–36).

b) Arguments and construction in the district court

The district court’s order on claim construction does not provide reasoning behind the constructions adopted therein. *See* Ex. 2009. However, we find instructive that the district court, in construing “processing service(s),” essentially adopted a construction proposed by Petitioner (aside from excluding the negative limitation at the end of Petitioner’s proposal). Specifically, Petitioner proposed construing “request for [a] processing service” as a “request for a communication device to perform a computing process for the application *that constitutes more than acting as a speaker or input device.*” Ex. 2012, 24 (emphasis added).¹⁴ Petitioner similarly proposed construing “processing service(s)” as “a computing process performed by a communication device for the application

¹⁴ For ease of reference, we refer herein to the original pagination of the district court papers.

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that constitutes more than acting as a speaker or input device.” Id.

(emphasis added). The district court essentially adopted Petitioner’s proposed construction for “processing service(s),” except for the italicized portion quoted above, and determined that “request for [a] processing service” should be afforded its “[p]lain and ordinary meaning.” *See* Ex. 2009, 2 (stating that “request for [a] processing service” is given its “[p]lain and ordinary meaning” and that “processing service(s)” is “a computing process performed by a communication device for all or part of the application” (first alteration in original)).

In support of its proposed constructions, Petitioner argued:

The specification confirms that the “services” are provided to the “application.” It describes that the application server executes an application and sends a “request for processing service” to the communication device. The communication device performs the “processing service” for the application to assist with the interaction between the communication device and the remotely executed application. The claims also all recite that a “request for processing service” is sent to a communication device after the step wherein the application is executed.

Ex. 2012, 26 (citations omitted).

Patent Owner, on the other hand, proposed construing “processing service(s)” as “automated operation of a hardware component on [a]/[the] [communication device]/[client device].” Ex. 2011, 14 (alterations in original). Patent Owner argued that the “processing service(s)” are “‘automated’ at least because they are controlled by computer code instructions.” *Id.*

Petitioner argued that Patent Owner’s proposed construction for “processing service(s)” was under-inclusive in requiring “automated operation,” reasoning that “the specification gives examples of ‘processing

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services’ that are not ‘automated’ and instead require user input to the processing service.” Ex. 2012, 27. “For instance,” Petitioner continued, “the application server may communicate a ‘voice recognition software program’ to ‘assist client 18a in executing one or more queries associated with the VoiceXML-based application.’ To perform the ‘processing service,’ the communication device needs user input. This processing service is thus not an ‘automated operation.’” *Id.* (citation omitted).

Patent Owner responded by characterizing Petitioner’s argument as “conflat[ing] the *processing service* (*i.e.*, the activity performed by the device) with the *user’s interaction with the device* (*i.e.*, the user’s spoken response to the microphone in the communication device).” Ex. 2014, 18–19. Patent Owner then asserted that human interaction does not provide the automated processing that Patent Owner asserts is required by the ’816 patent claims:

Humans do not process computer code instructions the same way a communication device does. This is the same mistake [Petitioner] makes in every one of its IPR Petitions, where it argues that playing an audio prompt on the host side of the system for the user to listen to on a telephone call is a “request for processing service.” It is not, because it does not provide for any processing of instructions *on the client device*—it solicits only a spoken or touchtone response *from the user*, which is processed on the host side. In contrast, in the [’816 patent] . . . the application server transmits executable instructions to the communication device. Contrary to [Petitioner’s] under-inclusive argument, this processing is “automated” (as in [Patent Owner’s] construction) because it results from the automatic processing of instructions on the communication device. For example, if the instruction to the communication device is to activate a microphone and listen for a spoken response, that instruction is executed whether the user gives a spoken response or not. [Petitioner’s] example therefore fails.

Id. at 19.

c) Analysis

Turning first to the term “request,” we note that the ’816 patent uses this term broadly, spanning different contexts beyond those described in the excerpts quoted by Patent Owner. *See* PO Resp. 21–22. For example, in describing Figure 1A, the ’816 patent describes client 18a as initiating “an information collection and/or retrieval process by communicating a request to application server 24.” Ex. 1001, 6:16–18. The ’816 patent further states that “any of clients 18a–18n could initiate the communication session with application server 24.” *Id.* at 6:20–22. As illustrated in Figure 1, clients 18a–18n include cell phones, personal digital assistants (“PDAs”), Wi-Fi devices, and IP phones. *Id.* at Fig. 1A; *see also id.* at 4:22–27, 6:5–7. The ’816 patent further states that “[l]andline phones and/or IP phones can also communicate with repository 20 and/or application server 24 in the same manner as mobile phones.” *Id.* at 6:5–7. Thus, by describing that a “request” may be sent by a landline phone, and not just by a cell phone or computer, the ’816 patent uses the term “request” without limiting it to “an action at the computer-code-instruction level,” as Patent Owner argues. *See* PO Resp. 20. We, therefore, do not adopt Patent Owner’s proposed construction of “request.” We do not need to further construe that term to resolve the parties’ disputes herein.

Turning next to “processing services,” we note that the ’816 patent describes “processing services” in the context of a “thin-client” as the client device. *See, e.g.,* Ex. 1001, 4:18–22. The ’816 patent states that such a client “may include, for example, a wireless device, a voice over IP device, a desktop computer, a laptop computer, a personal digital assistant, a cell-phone, a Wi-Fi device, a workstation, a mainframe computer, a mini-frame

computer, a web server, or any other computing and/or communicating device.” *Id.* at 4:22–27. The ’816 patent further describes the processing services provided by a thin-client as “execut[ing] portions of code to assist with the interaction with remotely executed application 28.” *Id.* at 6:32–33. By way of example, the ’816 patent describes the application server as executing “a VoiceXML-based application” that enables the application server to interact with and collect information from the client. *Id.* at 6:49–53. In that example, the application server communicates a voice recognition software program to the client, which the client then uses to convert a user’s spoken responses to a series of queries into data that is packetized and communicated, in a packet-based communication, back to the application server. *Id.* at 7:1–22. The application server then “receives and decodes the user’s responses to each of the queries associated with the Voice XML-based application.” *Id.* at 7:25–27.

Thus, in the context of the ’816 patent, a “request for processing service” comes from, e.g., a server, and encompasses a request for a client device to process a user’s spoken responses into, e.g., packetized data that can then be returned to the server for use in executing the application. This description is consistent with the construction of “processing service” adopted by the district court, as “a computing process performed by a communication device for all or part of the application” (Ex. 2009, 2), which, as noted above, is a broader version of what Petitioner advocated before the district court (Ex. 2012, 24) and is the same as what Patent Owner advocates here (PO Resp. 19).

We, therefore, construe “processing service” as “a computing process performed by a communication device for all or part of the application.”

3. “*application*”

Independent claims 1, 14, 20, and 29 recite “an application.” Ex. 1001, 13:52–53, 14:52–55, 15:40–43, 16:37–39. For example, claim 1 recites that the application is executed by an application server that is remote from a communication device (e.g., client device). *Id.* at 13:58–63.

Patent Owner states that the district court construed the term “application[.]” according to “its plain and ordinary meaning.” PO Resp. 20. Patent Owner purportedly agrees with the district court’s approach, but further contends that, consistent with the use of the term in the ’816 patent and in the cited prior art, the ordinarily skilled artisan “would understand that an application is not merely a script or variable *used by an application* to interact with a user or a communication device.” *Id.* (citing Ex. 2029 ¶¶ 100–105).

Petitioner did not propose a construction of “application” in the Petition. Pet. 5. In response to Patent Owner’s proposal, Petitioner contends that “[t]he plain meaning of ‘application’ in the ’816 patent is ‘functionality that is capable of facilitating the ability to collect information from and/or present information to one or more clients . . . or users of [the] system.’” Reply 4–5 (quoting Ex. 1001, 4:45–49 (third alteration in original)).

As discussed in more depth below, the parties’ dispute regarding the meaning of “application” is material to whether Gilmore’s VoiceXML scripts are excluded from the scope of “application(s)” as recited in the ’816 patent claims, as Patent Owner contends. *See* PO Resp. 33–35 (arguing that VoiceXML scripts are not applications but are scripts used by an application); *but see* Reply 12–14 (arguing that VoiceXML scripts provide the functionality of an application as described in the ’816 patent). We preview that dispute here to provide context for the parties’ competing

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constructions.

The '816 patent provides an explicit description of the term “application,” stating:

As used throughout this document, the term “application” *refers to functionality that is capable of facilitating the ability to collect information from and/or present information to one or more clients 18 or users of system 10.* In one particular non-limiting example, application 28 comprises a series of queries requesting information from and/or presenting information to a user of client 18. In some cases, applications 28 may include, for example, a Voice XML-based application, an HTML-based application, an XML-based application, an XIVR-based application, or a combination of these or other application formats. Applications 28 may comprise, for example, software, firmware, code, portions of code, a program, a web-page, information compilations, and/or a combination of these or any other types of utilities. In other embodiments, database 22 may be capable of storing, for example, one or more functions and/or other information.

Ex. 1001, 4:45–61 (emphasis added). This broad description includes not just “software” and “program(s),” but also includes, e.g., “a series of queries requesting information” as well as “information compilations.” *Id.* As such, this description is broader than Patent Owner’s apparent contention that the “plain and ordinary meaning” of the term “application” is an executable program, which does not encompass merely a “script” that may be “used by an application.” *See* PO Resp. 20; Sur-reply 4 (“While there may be a voice application that is executed in *Gilmore*, it is not the script files Petitioner consistently relies on in its Petition.”).

At oral argument, Patent Owner argued that the '816 patent’s use of the term “comprises” in describing the above-quoted example of an application that “comprises a series of queries requesting information from and/or presenting information to a user of client 18” means that a “series of

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queries requesting information” is *not* sufficient to constitute an “application.” Tr. 20:15–21:11. That is, Patent Owner argued that use of the open-ended term “comprises” means that *more is required* for an application than the listed items, and thus the above-quoted description means only that, for example, a “series of queries” could be *part of* an application or a piece of an application, but is not an application *per se*. *Id.* at 23:6–13 (characterizing an “application” as “the component that truly provides the functionality” and stating that “something that goes into an application, such as a script or a word, that the application then operates upon . . . is different than what an application is”).

Patent Owner’s argument is unavailing. From a logical standpoint, if the ’816 patent’s written description were listing items that are merely a *portion* of some larger (albeit undefined) “application” entity, it would not list both “code” as well as “portions of code,” much less include broader categories of “software” and “program[s]” in the same list. The more logical reading of the quoted passage is that any one of the listed items is an example of an “application,” as long as it provides “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more clients 18 or users of system 10.” Ex. 1001, 4:45–49.

Based on the description provided in the ’816 patent, we construe the term “application” as “functionality that is capable of facilitating the ability to collect information from, and/or present information to, one or more client devices or users.”

4. Other terms

We determine that we do not otherwise need to expressly construe any other terms for purposes of this Decision. *See Nidec Motor Corp.*, 868 F.3d at 1017.

D. Asserted References

Before turning to Petitioner’s asserted grounds of unpatentability, we provide a brief summary of the asserted references.

1. Gilmore (Ex. 1005)

Gilmore is a published U.S. Patent Application entitled “Dynamic Content Generation for Voice Messages.” Ex. 1005, code (54). Gilmore was published on November 20, 2003 (*id.* at code (43)), and is thus prior art under 35 U.S.C. § 102(b). Pet. 1. Patent Owner does not dispute the prior-art status of Gilmore.

Gilmore’s method “simulate[s] a conversation with the caller” using an automated voice response system having a voice gateway that presents a generated voice message to a telephone caller. Ex. 1005 ¶¶ 10, 39; *see also id.* ¶ 3. Figure 2 shows such a voice response system and is reproduced below.

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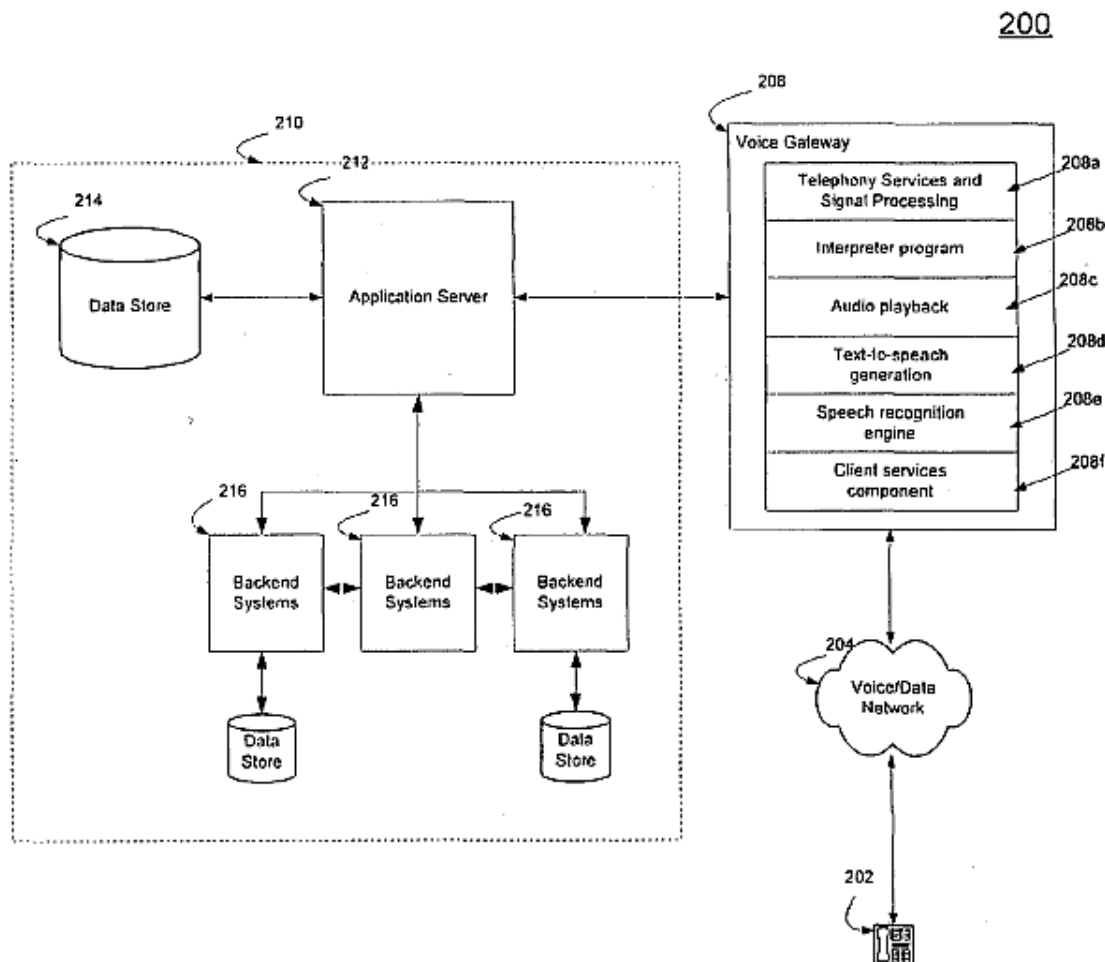


Fig. 2

Figure 2 shows a block diagram of a voice communications system and associated components. Ex. 1005 ¶ 17.

As shown in Figure 2, users of voice communications device 202, e.g., a telephone, place calls using voice/data network 204. *Id.* ¶¶ 33, 38.

According to Gilmore, such networks include the following:

[A] circuit-switched voice network such as the public switched telephone network (PSTN), a packet-switched data network, or any other network able to carry voice. Data networks may include, for example, Internet protocol (IP)-based or asynchronous transfer mode (ATM)-based networks and may support voice using, for example, Voice-over-IP, Voice-over-ATM, or other comparable protocols used for voice data communications.

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Id. ¶ 31; *see also id.* ¶ 36. The “[i]ncoming calls are answered by the telephony services and signal processing component 208a of the voice gateway 208” (*id.* ¶ 38), i.e., the voice gateway “responds to the calls in accordance with a voice program” (*id.* ¶ 33). In particular, an interpreter program in the voice gateway responds to the incoming calls by “retrieving and executing voice programs,” and “application server 212 provides the execution environment for voice applications.” *Id.* ¶¶ 39–40. Each voice application “may be a combination of, for example, java servlets, java server pages, other java code, and voice scripts such as VoiceXML scripts or SALT scripts.” *Id.* ¶ 40. “In typical operation, the voice gateway 208 retrieves the initial voice script from local memory and/or from the application server 212 and . . . execut[es] the voice-specific instructions within the script.” *Id.* ¶ 48. The “voice-specific instruction may be a prompt instruction,” i.e., a request for the user to respond with user input. *Id.* ¶¶ 39, 48.

2. Dhara (Ex. 1009)

Dhara is a published U.S. Patent Application entitled “Method of Implementing a VXML Application into an IP Device and an IP Device having VXML Capability.” Ex. 1009, code (54). Dhara was published on October 30, 2003 (*id.* at code (43)), and thus is prior art under 35 U.S.C. § 102(b). Pet. 1. Patent Owner does not dispute the prior-art status of Dhara.

Dhara discloses an IP device, e.g., an IP phone, personal digital assistant, wireless communication device, that executes the instructions of a “voice extensible markup language (VXML)” script file “to establish an audio interface with . . . the user of the IP device.” Ex. 1009 ¶¶ 7, 19. Figure 2 shows such an IP device and is reproduced below.

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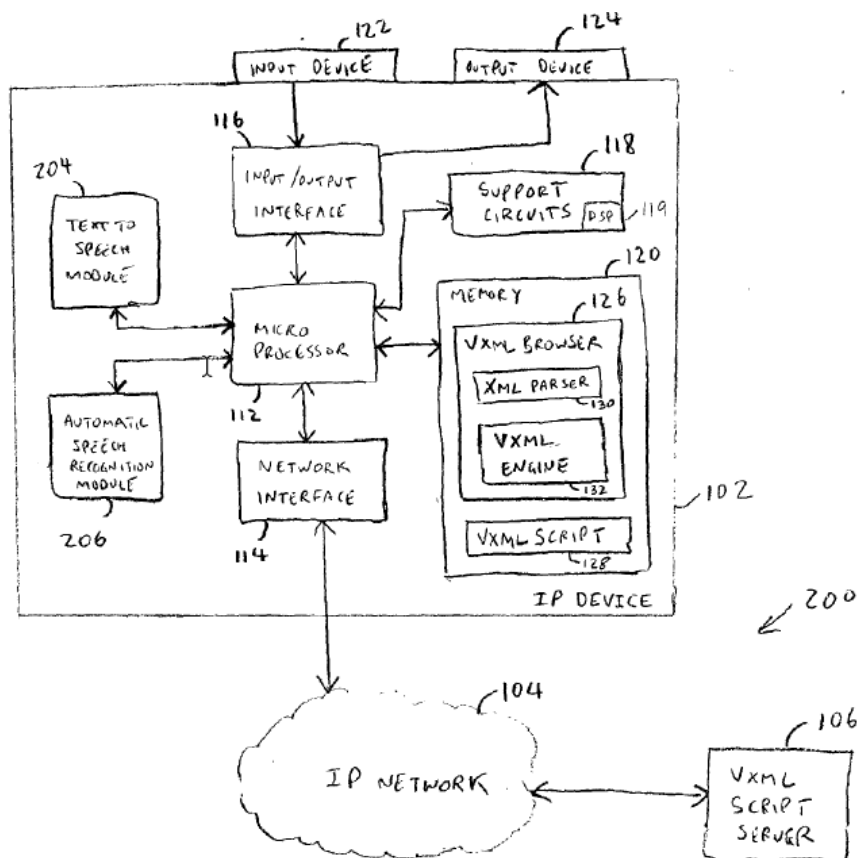


FIG. 2

Figure 2 shows a block diagram of an IP device in a computer network system. Ex. 1009 ¶¶ 11, 28.

As shown in Figure 2, “IP device 102” includes components for “implementing a [VoiceXML] application to provide an audio interface to a user of the device 102.” *Id.* ¶ 20. In particular, the IP device includes a VoiceXML browser 126 that contains instructions to “implement an audio interface accessible to a user of the IP device 102.” *Id.* ¶ 23. Further, IP device 102 includes “a text-to-speech (TTS) module 204,” which converts text into synthesized speech for IP device 102. *Id.* ¶ 28; *see also id.* ¶ 25. The text to be converted into speech is transmitted to the IP device in VoiceXML script files from VoiceXML server 106. *Id.* ¶¶ 24, 31–32. For

example, the VoiceXML script includes “an instruction contain[ing] a text prompt element.” *Id.* ¶ 32.

3. *Dodrill (Ex. 1006)*

Dodrill is a U.S. Patent entitled “Application Server Configured for Dynamically Generating Web Pages for Voice Enabled Web Applications.” Ex. 1006, code (54). Dodrill issued on July 20, 2004 (*id.* at code (45)), and thus is prior art under 35 U.S.C. § 102(b). Pet. 1. Patent Owner does not dispute the prior-art status of Dodrill.

Dodrill teaches a “web-based voice messaging system [that] provides voice application control between a [user’s] web browser and an application server.” Ex. 1006, code (57). The web browser is provided by a client, e.g., a “thin client.” *Id.* at 3:4–9, 3:16–22. The “application server executes a voice-enabled web application by runtime execution of extensible markup language (XML) documents that define the voice-enabled web application to be executed.” *Id.* at 5:7–10. Those “XML pages are stored as XML applications and functions 96, for example within a document database accessible by the application server.” *Id.* at 9:16–19.

4. *Creamer (Ex. 1010)*

Creamer is a published U.S. Patent Application entitled “Customized Interactive Voice Response Menus.” Ex. 1010, code (54). Creamer was published on June 24, 2004, *id.* at code (43), and is thus prior art under 35 U.S.C. § 102(b), *see* Pet. 1. Patent Owner does not dispute the prior-art status of Creamer.

Creamer relates to a method for providing customized interactive voice response (IVR) menus, which includes “monitoring user interactions with an [IVR] system.” Ex. 1010, code (57). Creamer teaches that the “IVR system 125 can include one or more IVR applications hosted on one or more

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IVR servers.” *Id.* ¶ 25. Creamer teaches that, in one embodiment, “the IVR system 125 can include a stand-alone solution contained within a single server interfacing directly with the telecom network 110 without being communicatively linked to the computer communications network 120.” *Id.* In another embodiment, “[t]he IVR system 125 can alternatively be implemented by multiple servers in a distributed fashion.” *Id.*

5. Fawcett (*Ex. 1017*)

Fawcett is a U.S. Patent entitled “System and Method for Graphically Displaying and Navigating Through an Interactive Voice Response Menu.” *Ex. 1017*, code (54). Fawcett issued on September 1, 1998, *id.* at code (45), and thus is prior art under 35 U.S.C. § 102(b), *see* Pet. 2. Patent Owner does not dispute the prior-art status of Fawcett.

Fawcett relates to the “graphical and textual display of [IVR] information.” *Ex. 1017*, 1:15–16. Figure 4 of Fawcett, reproduced below, shows “a block diagram showing a layered software support messaging architecture used to produce a graphical display.” *Id.* at 4:40–43.

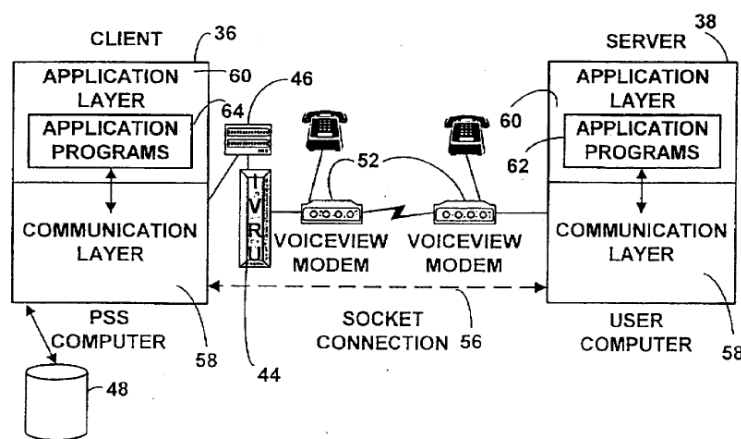


Figure 4 is a block diagram of Fawcett’s layered software support messaging architecture. *Ex. 1017*, Fig. 4.

Fawcett teaches that data and commands are passed between the client and the server via a “socket connection” 56. *Id.* at 7:19–23, 7:33–34.

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Fawcett teaches that it “is well known in the art” that “a socket is a communication object from which messages are sent and received,” and that “[s]ockets are common inter-process communication objects in many operating systems.” *Id.* at 7:34–38. As examples of sockets, Fawcett lists “VoiceView™ sockets, UNIX® sockets, or datagrams, TCP/IP sockets, IPX or other sockets.” *Id.* at 7:39–42. In addition, Fawcett teaches that “[c]ommunication between a particular interpreter and agent occurs via a socket identifier allocated to the pair.” *Id.* at 8:4–5.

6. *Ladd (Ex. 1016)*

Ladd is a U.S. Patent entitled “Voice Browser for Interactive Services and Methods Thereof.” Ex. 1016, code (54). Ladd issued on July 31, 2001, *id.* at code (45), and thus is prior art under 35 U.S.C. § 102(b), *see* Pet. 2. Patent Owner does not dispute the prior-art status of Ladd.

Ladd relates to “methods and systems to allow a user to access information from an information source.” Ex. 1016, 1:22–25. Ladd teaches that the “system 100 enables users to access information from any location in the world via any suitable network access device.” *Id.* at 2:40–42. Further, “users can preferably access information from the information source 106 using voice inputs or commands.” *Id.* at 2:48–49.

In one embodiment, the system includes a voice recognition (VRU) server 234. *Id.* at 6:65–7:1. The VRU server 234 “receives speech communications from the user,” “processes the speech communications and compares the speech communications against a vocabulary or grammar stored in the database server unit 244 or a memory device,” and “provides output signals, representing the result of the speech processing.” *Id.* at 8:55–63.

Ladd teaches that the VRU server 234 “preferably includes a text-to-speech (TTS) unit 252, an automatic speech recognition (ASR) unit 254, and a speech-to-text (STT) unit 256.” *Id.* at 9:1–3. “The TTS unit 252 processes the textual data and converts the data to voice data or information.” *Id.* at 9:8–10. “The STT unit 256 of the VRU server 234 receives speech inputs or communications from the user and converts the speech inputs to textual information (i.e., a text message).” *Id.* at 9:45–47. Ladd teaches that the textual information can be sent to the markup language servers and a voice browser. *Id.* at 9:48–51. Ladd teaches that “voice browser 250 generates a content request (i.e., an electronic address) to navigate to a destination” providing information, such as a URL. *Id.* at 11:30–36.

7. *Patel (Ex. 1007)*

Patel is a published U.S. Patent Application entitled “System and Method for Improved Contact Center Services to Disabled Callers.” Ex. 1007, code (54). Patel published on November 16, 2006, *id.* at code (43), and is prior art under 35 U.S.C. §§ 102(a), (e), *see* Pet. 1. Patent Owner does not dispute the prior-art status of Patel.

Patel is directed to a system for providing automated voice response call services. Ex. 1007 ¶¶ 2, 10. In particular, “[w]hen a person with a disability calls into a call or contact center the caller’s disability is identified . . . an initial menu prompt may ask the caller to make a certain keypad, touch-tone, or voice response if they have a disability and would like to receive special treatment.” *Id.* ¶ 15. Caller devices “include[] a user interface (e.g., keypad, voice, touch-screen, etc.) that enables the caller to input data” such as “keypad or touch-tone input.” *Id.* ¶ 18. Further, those features “may be downloaded as a computer program product, wherein the

program may be transferred from a remote computer (e.g., a server) to a requesting process (e.g., from a caller device).” *Id.* ¶ 26.

E. Ground 1: Obviousness over Gilmore, Dhara, and Dodrill

Petitioner contends that claims 1–6 and 11–13 are unpatentable under 35 U.S.C. § 103(a) as obvious over Gilmore, Dhara, and Dodrill. Pet. 5–46. Patent Owner opposes. PO Resp. 33–61; Sur-reply 13–24. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claims 1–6 and 11–13 are unpatentable as having been obvious over Gilmore, Dhara, and Dodrill.

1. The limitations of claim 1

Petitioner contends that Gilmore teaches most of the limitations of claim 1. Pet. 10 (citing Ex. 1021 ¶¶ 77–164). As to those limitations not taught by Gilmore alone, Petitioner contends that the combination of Gilmore and Dhara teaches limitation 1c2, and that the combination of Gilmore and Dodrill renders obvious limitations 1h and 1i. *Id.* at 17–20, 31–36.

In support of its contentions as to Gilmore, Petitioner provides a detailed mapping of: the preamble,¹⁵ *see id.* at 10 (citing Ex. 1005 ¶¶ 29, 36; Ex. 1021 ¶ 79); limitation 1a, *see id.* at 10–13 (citing Ex. 1005, Fig. 2, ¶¶ 29, 31–35, 39–41, 43, 46, 48, 51; Ex. 1021 ¶¶ 80–83); limitation 1b, *see id.* at 13–15 (citing Ex. 1005 ¶¶ 15, 33, 38–40, 46–49; Ex. 1021 ¶¶ 84–96); limitation 1c1, *see id.* at 16–17 (citing Ex. 1005, Fig. 2, ¶¶ 37, 39, 44, 48–49, 72; Ex. 1021 ¶¶ 97–100); limitation 1d, *see id.* at 21–23 (citing Ex. 1005,

¹⁵ Neither party takes a position on whether the preambles to the claims are limiting. We accept Petitioner’s showing that the preambles are taught or suggested by the prior art, without deciding whether the preambles are limiting.

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Fig. 2, ¶¶ 14, 40, 42, 45–46, 52, 75; Ex. 1021 ¶¶ 118–124); limitation 1e, *see id.* at 23–26 (citing Ex. 1005, Figs. 1–2, ¶¶ 40, 45–46, 48, 52, 75; Ex. 1021 ¶¶ 125–131); limitation 1f, *see id.* at 26–28 (citing Ex. 1005, Fig. 1, ¶¶ 31, 35, 39–40, 46, 48; Ex. 1021 ¶¶ 132, 134–136); limitation 1g, *see id.* at 28–31 (citing Ex. 1005, Fig. 9, ¶¶ 39, 43–44, 48, 52, 64, 70, 74, 77, 103; Ex. 1021 ¶¶ 137–144). In support of its contentions as to the combination of Gilmore and Dhara, Petitioner provides a detailed mapping of limitation 1c2. *See id.* at 17–19 (citing Ex. 1005 ¶¶ 3, 31, 35, 39, 50, 104, 115; Ex. 1009 ¶¶ 19, 30, 31, 42; Ex. 1021 ¶¶ 101–109). And, in support of its contentions as to the combination of Gilmore and Dodrill, Petitioner provides a detailed mapping of limitations 1h and 1i. *See id.* at 31–33 (citing Ex. 1005, Fig. 9, ¶¶ 33–34, 39–48, 103; Ex. 1006, Fig. 7, 8:18–24, 9:12–24, 11:61–12:30; Ex. 1021 ¶¶ 145–150).

In response, Patent Owner argues that Petitioner’s showing as to claim 1 is deficient because: (1) Gilmore’s VoiceXML scripts are not “applications,” and therefore the Petition fails to identify the claimed “application” and related elements, PO Resp. 33–38 (identifying limitations 1e and 1g); (2) the Petition fails to identify an application server that establishes a communication session in response to a request from a communication device, *id.* at 38–43 (identifying limitation 1b); and (3) Gilmore does not disclose an application server that sends a request for processing service to a communication device, *id.* at 43–50 (identifying limitations 1h and 1i). Below, we address first the undisputed limitations of claim 1, and then turn to the disputed limitations.

a) Undisputed limitations

We find Petitioner has shown, by a preponderance of the evidence, that the undisputed limitations of claim 1 (i.e., the preamble, limitation 1a,

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limitations 1c1 and 1c2, limitation 1d, and limitation 1f) are satisfied by Gilmore, Dhara, and Dodrill. We adopt the contentions set forth in the Petition and in Mr. Lipoff's Declaration as mapped to the undisputed limitations of challenged claim 1 as our own findings. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (explaining that the Board need not make specific findings about claim limitations that a patent owner does not dispute are disclosed in the prior art).

For example, Patent Owner does not expressly challenge Petitioner's showing of "an application server" coupled to a "first communication link" and "a second communication link," each comprising "a data connection," as recited in limitation 1a. We find that Petitioner has shown, by a preponderance of the evidence, that these recitations are satisfied by Gilmore. In particular, Petitioner presents evidence that Gilmore discloses a voice gateway 108/208 coupled to a voice/data network 104/204 and to a data network 112. Petitioner persuasively maps Gilmore's voice gateway to the claimed application server, Gilmore's voice/data network to the claimed first communication link, and Gilmore's data network to the claimed second communication link. Pet. 10–13 (citing Ex. 1005, Figs. 1, 2, ¶¶ 29, 31–35, 39–41, 43, 46, 48, 51; Ex. 1021 ¶¶ 80–83). Petitioner presents evidence that Gilmore's voice/data network 104/204 is a "data connection" as claimed in limitation 1a because it is a data network that uses "Internet protocol (IP) or other comparable protocol for 'voice data connections' to transfer data," such as voice data or web pages. *Id.* at 12 (citing Ex. 1005 ¶ 31; Ex. 1021 ¶ 82). And Petitioner presents evidence that Gilmore's data network 112 is also a "data connection" because it is a data network "compatible with standard network data protocols (e.g., TCP /IP) and capable of carrying packetized data, such as VoiceXML scripts." *Id.* at 13 (citing Ex. 1005

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¶¶ 35, 40–41, 46; Ex. 1021 ¶ 83). We find that Petitioner’s showing is supported by the cited disclosures and the credible testimony of Mr. Lipoff.

As another example, Patent Owner does not expressly challenge Petitioner’s showing of an application server comprising “a voice processing software program” as recited in limitation 1c1, nor Petitioner’s showing of a request from a communication device comprising “packetized voice data” as recited in limitation 1c2. *See generally* PO Resp. Again, we find that Petitioner has shown, by a preponderance of the evidence, that these limitations are satisfied by Gilmore and/or the combination of Gilmore and Dhara. Petitioner presents evidence that Gilmore’s voice gateway “includes software, such as interpreter program 208b, audio playback component 208c, text-to-speech generation component 208d, and speech recognition engine 208e” and that these components are a “voice processing software program” as recited in limitation 1c1 because they generate a voice representation of information. Pet. 16–17 (citing Ex. 1005, Fig. 2, ¶¶ 37, 39, 44, 48–49, 72; Ex. 1021 ¶¶ 97–100). As to limitation 1c2, Petitioner also presents persuasive evidence that Dhara teaches or suggests software stored in memory to capture voice inputs for packetization, transmit communication requests, transmit packetized voice data, receive processing requests, and present voice representations to the user. *Id.* at 17–19 (citing Ex. 1005 ¶¶ 3, 31, 35, 39, 50, 104, 115; Ex. 1009 ¶¶ 19, 30, 31, 42; Ex. 1021 ¶¶ 101–109). Again, we find that Petitioner’s showings are supported by the cited disclosures and the credible testimony of Mr. Lipoff.

As for the remaining undisputed limitations, we find that Petitioner has set forth persuasive argument and evidence for: the preamble, *id.* at 10 (citing Ex. 1005 ¶¶ 29, 36; Ex. 1021 ¶ 79); limitation 1d, *id.* at 21–23 (citing Ex. 1005, Fig. 2, ¶¶ 14, 40, 42, 45–46, 52, 75; Ex. 1021 ¶¶ 118–124), and

limitation 1f, *id.* at 26–28 (citing Ex. 1005, Fig. 1, ¶¶ 31, 35, 39–40, 46, 48; Ex. 1021 ¶¶ 132, 134–136).

b) Disputed limitations

We now address the sufficiency of Petitioner’s showing as to the remaining, disputed, limitations of claim 1 (i.e., 1b, 1e, 1g, 1h, and 1i) in the context of Patent Owner’s arguments.

(1) Applications received by an application server and from which a voice representation of information is derived (limitations 1e and 1g)

Claim 1 recites that “the application server is either (a) configured to receive the application via the second communication link, or (b) configured to cause an execution of the application via the second communication link.” Ex. 1001, 13:54–57 (limitation 1e). Claim 1 further recites that the application server comprises a voice processing software program that “is configured to generate a voice representation of information derived from the application.” *Id.* at 13:61–63 (limitation 1g).

Central to the parties’ dispute over these limitations is the proper construction of the term “application,” which we have addressed above. *Supra* § III.C.3. We first address application of that construction to Petitioner’s showing regarding Gilmore’s VoiceXML scripts as applications. Then we turn to the parties’ disputes regarding whether (1) Gilmore teaches or suggests an application server that is configured to receive an application via a second communication link or to cause execution of the application via the second communication link (limitation 1e); and (2) Gilmore teaches or suggests an application server that is configured to generate a voice representation of information derived from an application or an execution of an application (limitation 1g).

(a) Gilmore’s VoiceXML scripts are applications

Patent Owner argues that Petitioner has failed to demonstrate that any of the “application” limitations are satisfied because Petitioner maps the claimed “applications” to Gilmore’s VoiceXML scripts and dynamic content generation (“DCG”) commands, which Patent Owner contends “are not ‘applications’ as the term is used in the ’816 [p]atent and as it would be understood by [the ordinarily skilled artisan].” PO Resp. 33. Patent Owner continues:

Gilmore at most discloses a *single* VoiceXML-based application (not identified in the Petition) that is executed on the application server. It accesses VoiceXML script files, processes them as part of the execution of the application, and sends prompts to the voice gateway to be rendered and played over the phone to a user. But the script files themselves (and particular text within them) are not applications.

Id. at 35 (citing Ex. 2029 ¶¶ 104–105).

Petitioner responds that VoiceXML scripts meet the definition of an application as recited in the ’816 patent—namely, functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users. *See* Reply 14 (citing Ex. 1001, 4:45–49). Thus, according to Petitioner, “executing VoiceXML scripts executes ‘applications’ as used in the ’816 patent.” *Id.* Petitioner also presents evidence that Gilmore processes DCG commands as part of the “application” caused to be executed on application server 212. *Id.* at 13 (citing Ex. 1005 ¶¶ 40, 52, 90–91, 110; Pet. 25–26). In particular, Gilmore describes “[a] dynamic content generation (DCG) command may be used in the voice scripts to significantly increase the ability of the scripts to dynamically change in response to different types of callers and in response to different caller inputs.” Ex. 1005 ¶ 52.

Patent Owner’s arguments are unavailing in part because they are premised on an overly narrow interpretation of the term “application,” which we have not adopted. *Supra* § III.C.3. As we discuss above, we agree with Petitioner that an “application,” within the meaning of the ’816 patent claims, includes “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users.” *Id.*; see Ex. 1001, 4:45–49.

We also agree with Petitioner that a VoiceXML script, as described in Gilmore, falls within the scope of an “application” as recited in the ’816 patent claims. In particular, Petitioner presents an annotated version of Figure 1 of Gilmore, reproduced below. Pet. 6.

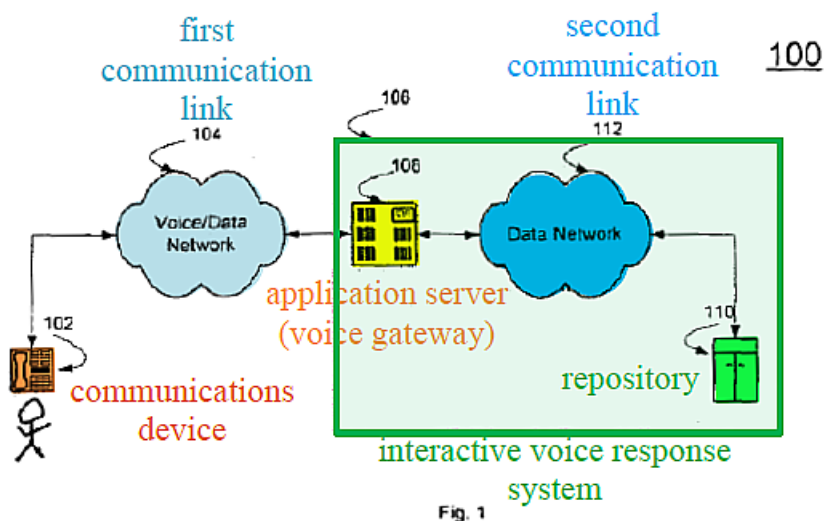


Figure 1 (annotated by Petitioner) is a diagram of an exemplary voice communications system. Ex. 1005 ¶ 16.

Petitioner presents evidence that, as shown in Figure 1, Gilmore discloses a communication system “for remotely executing applications in an interactive voice response (‘IVR’) system 106 (green) over a voice/data network 104/204 (blue).” Pet. 5–6 (citing Ex. 1005 ¶ 31). Petitioner further presents evidence that Gilmore’s “[g]ateway 108/208 (yellow) remotely

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executes, e.g., VoiceXML applications that interact with user device

102/202 (**orange**).” *Id.* at 6 (citing Ex. 1005 ¶¶ 33–34, 39–48).

Petitioner also provides an annotated version of Gilmore’s Figure 2, reproduced below, which illustrates various components of Gilmore’s IVR system. Pet. 7.

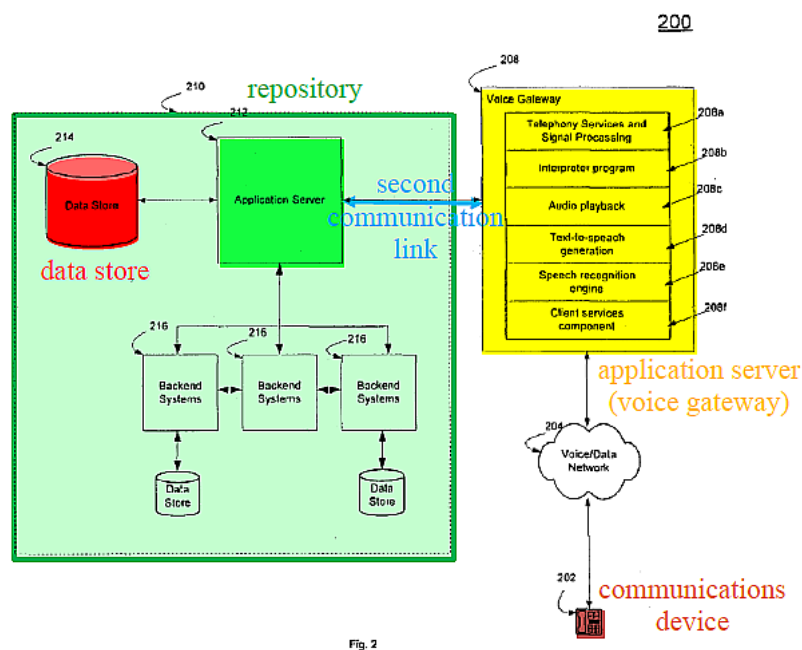


Fig. 2

Figure 2 (annotated by Petitioner) is a block diagram of a voice communications system. Ex. 1005 ¶ 17.

Petitioner presents evidence that, as shown in Figure 2, “[a]fter receiving an incoming request from a user communications device 102/202 (**orange**), voice gateway 108/208 (**yellow**) ‘receives script files from the application server 212 [(**green**)] which obtains the files from the data store 214 [(**red**)].” Pet. 6 (quoting Ex. 1005 ¶ 46) (alterations in original).

Petitioner further presents evidence that:

Gateway 108/208 then “parses the script by searching and executing the voice-specific instructions within the script.” While executing the scripts, gateway 108/208 “generat[es] outgoing speech or prompts using the audio playback component 208c and the text-to-speech generation component 208d . . . and

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listen[s] to spoken responses . . . using the speech recognition engine 208c.”

Id. at 6–7 (quoting Ex. 1005 ¶¶ 48, 39) (alterations in original).

We find that Petitioner’s showing is supported by the cited disclosures and the credible testimony of Mr. Lipoff. Gilmore discloses that its voice gateway executes voice scripts (e.g., VoiceXML scripts) to create speech prompts for a user and to receive caller responses to given prompts.

Ex. 1005 ¶ 39. As such, Gilmore’s VoiceXML scripts provide “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users”; therefore, we find that Gilmore’s VoiceXML scripts qualify as “applications” within the meaning of the ’816 patent.

(b) Gilmore’s application server is configured to receive the application via the second communication link or to cause an execution of the application via that link (limitation 1e)

Petitioner presents evidence that Gilmore discloses both alternatives recited in limitation 1e—that the application server is either (a) configured to receive the application via the second communication link, or (b) configured to cause an execution of the application via the second communication link. Pet. 23–26. In particular, referring to annotated Figure 1 of Gilmore, reproduced below, Petitioner presents evidence that voice gateway 108/208 is configured to receive VoiceXML scripts (i.e., applications) from the application server 212 over data network 112 (labeled “second communication link” by Petitioner). *Id.* at 23–24 (citing Ex. 1005 ¶ 46; Ex. 1021 ¶¶ 126–128).

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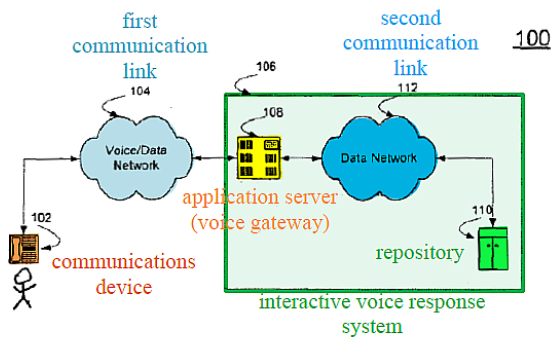


Fig. 1

Figure 1 (annotated by Petitioner) is a diagram of an exemplary voice communications system. Ex. 1005 ¶ 16.

Petitioner also presents evidence that Gilmore's application server 212 "obtains the [script] files from the data store 214" (annotated **red** below), as shown by the double-headed arrow in annotated Figure 2, reproduced below, and sends the application to voice gateway 108/208. Pet. 23–24 (citing Ex. 1005 ¶¶ 45–46, 52 ("When the voice gateway 208 requests a script from the application server 212, the application server 212 accesses the script from the data store 214") (alteration in original)).

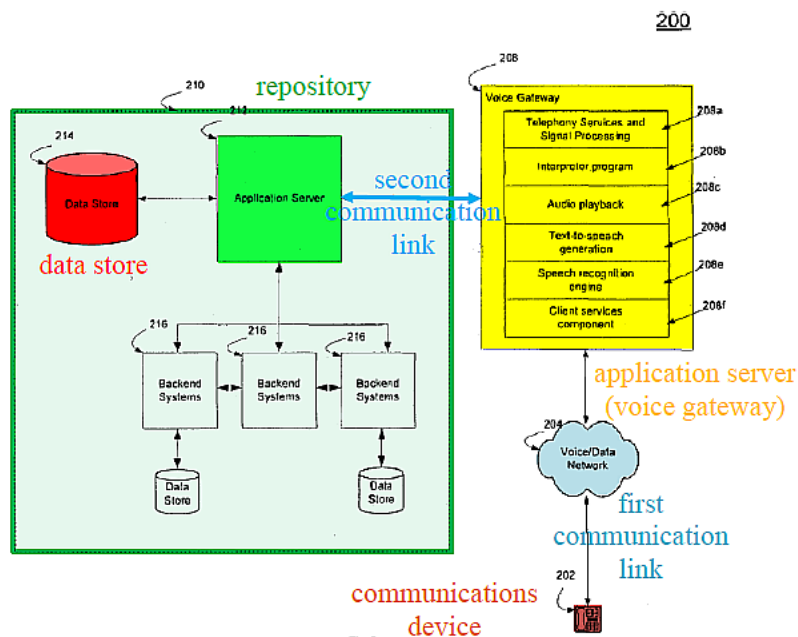


Fig. 2

Figure 2 (annotated by Petitioner) is a block diagram of a voice communications system. Ex. 1005 ¶ 17.

Thus, according to Petitioner, as shown in the annotated figure above, voice “gateway 108/208 (application server, **yellow**) receives VoiceXML script to be executed over data network 112 (second communication link, **blue**) from server 212 (**bright green**).” *Id.* at 24 (citing Ex. 1021 ¶ 128).

As to the second claimed alternative, Petitioner presents evidence that, when Gilmore’s voice “gateway 208 requests a script from the application server 212,’ server 212 ‘processes the script by resolving any DCG [dynamic content generation] commands within the script into voice instructions’ before sending it to voice gateway 108/208.” Pet. 25 (citing Ex. 1005 ¶ 52). We find that Petitioner’s showing is supported by the cited disclosures. Gilmore explains that “application server 212 provides the execution environment for voice applications” and that “application code executed by the application server 212 coordinates which scripts to send to the voice gateway 208.” Ex. 1005 ¶ 40. Thus, Gilmore confirms that application server 212 may process the scripts before sending the processed scripts to the voice gateway 208, such as by executing DCG commands (which meet the ’816 patent’s definition of “application”) over data connection 112 (second communication link) before receiving the application from application server 212. *Id.* ¶¶ 40, 52.

Patent Owner’s challenge to Petitioner’s showing regarding limitation 1e is premised on Patent Owner’s contention that VoiceXML scripts and DCG commands are not applications. PO Resp. 33–38. Patent Owner’s arguments are unavailing in part because they are premised on an overly narrow interpretation of the term “application,” which we have not adopted. *See supra* § III.C.3. As we discuss above, we agree with Petitioner that an “application,” within the meaning of the ’816 patent claims, includes “functionality that is capable of facilitating the ability to collect information

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from and/or present information to one or more client devices or users.” *Id.*; see Ex. 1001, 4:45–49. We further agree, as also noted above, that Gilmore’s VoiceXML scripts fall within the scope of an application. We similarly agree that DCG commands fall within the scope of an application, as they are used, for example, to “significantly increase the ability of the scripts to dynamically change in response to different types of callers and in response to different caller inputs.” Ex. 1005 ¶ 52. As such, they facilitate the ability to collect information from and/or present information to one or more client devices or users.

For these reasons, we are persuaded by Petitioner’s evidence and agree that Petitioner has sufficiently shown, by a preponderance of the evidence, that Gilmore teaches or suggests both of the alternatives recited in limitation 1e.

(c) Gilmore’s application server comprises a voice processing software program that is configured to generate a voice representation of information derived from the application (limitation 1g)

As to the requirement that the application server comprises a voice processing software program configured to generate a voice representation of information derived from the application, Petitioner presents persuasive argument and evidence that Gilmore’s generation of speech using text-to-speech processing is a voice representation “of information derived from the application,” because Gilmore’s VoiceXML script determines what audio to present based on the application’s instructions (e.g., prompt/grammar) and information in the application, e.g., menu options to speak for a specific user. Pet. 28–31; Ex. 1005 ¶¶ 39, 43–44, 48, 52, 64, 70, 74, 77, 103, Fig. 9; Reply 14–15; Ex. 1021 ¶¶ 137–144.

Petitioner further presents persuasive argument and evidence that, in *Gilmore*, the generated speech is a voice representation “of information derived from an execution of an application” because *Gilmore*’s voice gateway “generates speech from responses or response text (information) in the VoiceXML application,” which “text is determined (derived) and tailored to the user’s input by executing grammar instructions in the VoiceXML (execution of the application).” Reply 15 (citing Pet. 28–31, 43, 57; Ex. 1005 ¶¶ 39, 43–44, 48, 50, 64, 109). Petitioner further states that “[t]he new speech output from the prompt/text is thus the voice representation of the information (text) derived by executing the VoiceXML application.” *Id.* (citing Ex. 1005 ¶¶ 39, 43–44, 50; Pet. 28–31, 43, 57). Petitioner adds that “*Gilmore*’s speech is also ‘of information derived from execut[ing] the application’ because executing DCG commands in an application determines which information (e.g., menu options, prompts) to present to the user via text-to-speech based on user characteristics.” *Id.* (citing Pet. 25–26; Ex. 1005 ¶¶ 90–91, 97–98 (alteration in original)). Again, we find that Petitioner’s showing is supported by the cited disclosures and the credible testimony of Mr. Lipoff.

Patent Owner argues that *Gilmore* “fails to satisfy this element” because “the ‘execution’ of VoiceXML scripts in *Gilmore* is not the same thing as the execution of an *application* in *Gilmore* (and because the execution of the application in *Gilmore* does not happen on the alleged application server).” PO Resp. 37. In addition, according to Patent Owner:

Even if the VoiceXML scripts/DCG commands of *Gilmore* are “applications” (which they are not), *Gilmore* still fails to disclose that an application server generates a voice representation that is *derived from* such an application, because there is no derivation taking place in the rendering of the text of VoiceXML scripts, as

such information would be the application itself according to Petitioner.

Id. at 38 (citing Ex. 2029 ¶¶ 109–110).

We disagree with Patent Owner’s contentions, which are somewhat conclusory with regard to Patent Owner’s reading of “derived from” an application. In contrast, as noted above, Petitioner’s contentions are persuasive and supported by the cited evidence.

For these reasons, we find that Petitioner has demonstrated by a preponderance of the evidence that Gilmore teaches or suggests “wherein the voice processing software program is configured to generate a voice representation of information derived from the application” as recited in claim 1 (limitation 1g).

(2) *“an application server adapted to establish a communication session . . . in response to a request from the at least one communication device to establish the communication session” (limitation 1b)*

Claim 1 recites that the application server is “adapted to establish a communication session . . . in response to a request from the at least one communication device to establish the communication session.” Ex. 1001, 13:42–47 (limitation 1b). We address this limitation in two parts below, in which we determine: (a) whether Gilmore teaches a communication device that sends a request to establish a communication session; and (b) whether Gilmore’s disclosure of executing VoiceXML scripts teaches a “communication session.”

*(a) Request from the communication device
to establish a communication session*

Petitioner presents persuasive argument and evidence that Gilmore teaches a communication device that transmits a *request to establish a communication session*, as recited in limitation 1b. Pet. 13–15. Gilmore

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discloses a “voice communications device” 102/202 (e.g., a cellular phone), which Petitioner persuasively maps to the claimed communication device. Ex. 1005 ¶¶ 30, 36; Pet. 6. Petitioner contends, and we agree, that Gilmore’s “communication session is established in response to a request from [communication] device 102/202 to establish a session, such as a telephone call over network 104/204.” Pet. 15 (citing Ex. 1021 ¶ 92). Specifically, Gilmore’s voice gateway 108/208 “receives user calls from voice communications devices 102 via the network 104 and responds to the calls in accordance with a voice program.” Ex. 1005 ¶ 33; Pet. 15. Gilmore further teaches that “[i]ncoming calls are answered by the telephony services and signal processing component 208a of the voice gateway 208.” Ex. 1005 ¶ 38; Ex. 1021 ¶ 93.

Petitioner also presents persuasive argument and evidence that Gilmore’s voice gateway is adapted *to establish a communication session* in response to the communications device’s request, as recited in limitation 1b, by executing interactive VoiceXML applications. Ex. 1005 ¶¶ 39–40, 46, 48; Pet. 13–14 (citing Ex. 1021 ¶¶ 84–86). Specifically, Gilmore teaches that “voice gateway 208 retrieves the initial voice script” and “parses the script by searching and executing the voice specific instructions within the script.” Ex. 1005 ¶ 48. In one example, Gilmore’s voice gateway begins (“establishes”) the communication session when interpreter 208b “retriev[es] and execut[es] voice programs,” such as an interactive VoiceXML application, and “generat[es] outgoing speech or prompts” to which a user can respond. *Id.* ¶¶ 39–40; Pet. 13–14 (citing Ex. 1021 ¶¶ 86–88). Thus, Petitioner contends, and we agree, that Gilmore’s teaching of “[e]xecuting the application on gateway 108/208 *establishes a communication session*

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with device 102/202 over network 104/204 (first communication link).”

Pet. 13–14 (citing Ex. 1021 ¶ 87) (emphasis added).

In response, Patent Owner argues that Petitioner has a “stretched reading of *Gilmore*,” and accordingly, has failed “to identify in *Gilmore* a request to establish a communication session that is sent by a communication device to the application server.” PO Resp. 39 (citing Ex. 2029 ¶ 113). We disagree. As in the Institution Decision, we find that a communication device placing a call to a voice response system is a request to establish a communication session. *See* Inst. Dec. 29. In particular, we agree with Petitioner’s contention (supported by the testimony of Mr. Lipoff regarding the contemporaneous understanding of the ordinarily skilled artisan, which we credit) that “the call to *Gilmore*’s IVR system is a ‘request’” to establish a communication session because the call “initiates retrieval and execution of the script that establishes the session.” Pet. 15 (citing Ex. 1021 ¶ 95). We also find that, even if *Gilmore*’s voice gateway performs an intermediate processing step between the user contacting the IVR (“interactive voice response”) system and executing the application, the user’s initial call to the IVR system is still a “request” that starts the process and results in the voice gateway executing the application. *See* Ex. 1013, Section 1.3.2 (explaining that a “session” “begins when the user starts to interact with a VoiceXML interpreter context,” which occurs when the executed VoiceXML application sends a prompt to which a user can respond); Ex. 1021 ¶ 91; Pet. 14–15.

(b) Gilmore discloses a communication session

Patent Owner next argues that *Gilmore*’s executing VoiceXML scripts “is not a communication session.” PO Resp. 39–43. As support, Patent Owner makes various contentions that *Gilmore* discloses merely a

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“traditional IVR system,” and thus establishes only a “*call session*” and not a “communication session.” *Id.* at 40. Patent Owner distinguishes the ’816 patent as being “about connecting a computing device to a server so it can receive instructions requesting processing services and thus take on some of the application processing load, not making telephone calls.” *Id.* Patent Owner further argues that “any sending and receiving of ‘instructions’ in *Gilmore* occurs over the link between the voice gateway and the application server of *Gilmore*—not between an application server and a communication device.” *Id.* at 41 (citing Ex. 2029 ¶¶ 113–115). Patent Owner further argues that the need for a “voice gateway” in *Gilmore* underscores that *Gilmore* discloses merely telephone calls to an IVR system, because the voice gateway “acts to support telephone calls.” *Id.* at 42. In contrast, Patent Owner argues, because the ’816 patent does “not relate to telephone calls, there is no need for a voice gateway.” *Id.*

Patent Owner’s arguments boil down to the contention that *Gilmore*’s “call session” (in Patent Owner’s words) cannot be a “communication session” as claimed because it lacks the ability to send a request for processing services from the application server to the communication device. *Id.* at 40–43. As such, Patent Owner’s arguments actually implicate a different limitation—the application server communicating a request for processing service to the communication device—which we address in the next section.

As to whether *Gilmore* teaches or suggests establishing a communication session, Patent Owner’s arguments are unavailing because they are based on an unduly narrow reading of “communication session” that excludes voice telephone calls. The written description of the ’816 patent broadly describes client communication devices as follows:

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Each client 18 may include, for example, a wireless device, a voice over IP device, a desktop computer, a laptop computer, a personal digital assistant, a cell-phone, a Wi-Fi device, a workstation, a mainframe computer, a mini-frame computer, a web server, or any other computing and/or communicating device.

Ex. 1001, 4:22–27. The written description also discloses that “[l]andline phones and/or IP phones can also *communicate* with repository 20 and/or application server 24 *in the same manner* as mobile phones.” *Id.* at 6:5–7 (emphases added). Gilmore similarly describes a client (communication) device as “a device able to interface with a user to transmit voice signals across a network such as, for example, a telephone, a cell phone, a voice-enabled personal digital assistant (PDA), or voice-enabled computer.”

Ex. 1005 ¶ 30; *see also* Pet. 6. Thus, both the ’816 patent and Gilmore contemplate use of similar communication devices, including landline phones. We, therefore, do not agree with Patent Owner’s contention that a telephone call in Gilmore cannot qualify as a “communication session” as recited in the ’816 patent claims.

As we note above, we construe a “communication session” as encompassing the process of a communication device communicating information to, and/or retrieving information from, another communication device. *Supra* § III.C.1. We find that Gilmore discloses a communication device (voice communication device 102/202), such as a landline phone, an IP phone, or cell phone (Ex. 1005 ¶¶ 30, 36, Fig. 2). We further find that such a communication device communicating information to, and/or retrieving information from, Gilmore’s voice gateway falls within the scope of a “communication session,” as recited in the ’816 patent claims. In particular, in Gilmore, interpreter 208b on voice gateway 108/208 executes

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the interactive VoiceXML application and send prompts that the user can interact with and respond to using the communication device. *E.g.*, Ex. 1005 ¶¶ 39, 40, 46, 48, Fig. 2; Ex. 1021 ¶¶ 87–88. In this manner voice, voice gateway 208 “is able to simulate a conversation with the caller.” Ex. 1005 ¶ 39. We find such a simulated conversation, in which information is exchanged, is a communication session within the scope of the ’816 patent claims.

Based on the foregoing, we determine that Petitioner has demonstrated by a preponderance of the evidence that Gilmore teaches “the application server adapted to establish a communication session . . . in response to a request from the at least one communication device to establish the communication session,” as recited in claim 1 (limitation 1b).

(3) Application server sends a “request for processing service” to a communication device, wherein the request for processing service “comprises an instruction to present a user . . . the voice representation” (limitation 1h and 1i)

Claim 1 recites that the application server “is configured to transmit . . . a request for processing service . . . to the at least one communication device,” and further recites that “the request for processing service comprises an instruction to present a user . . . the voice representation” of information derived from the application (limitations 1h and 1i). Ex. 1001, 13:62–63, 14:1–3. Petitioner relies on the combination of Gilmore and Dodrill to teach that the application server is configured to transmit the voice representation over the first communication link to a communication device, and that the request for processing includes an instruction to present the voice representation to the user. *See* Pet. 31–33 (citing Ex. 1005, Fig. 9, ¶¶ 33–34, 39–48, 103; Ex. 1006, Fig. 7, 8:18–24, 9:12–24, 11:61–12:30; Ex. 1021 ¶¶ 145–150).

As discussed above, we construe “processing service” as “a computing process performed by a communication device for all or part of the application.” *Supra* § III.C.2. Thus, a request for processing service communicated by an application server to a communication device includes a request by the application server that the communication device perform a computing process for all or part of the application. *Id.*

Petitioner contends that Gilmore discloses presenting a “request for processing service” as outgoing voice representations, e.g., by using text-to-speech to generate audio .wav files, from the voice gateway to the user’s communication device. Pet. 31 (citing Ex. 1005 ¶¶ 48, 103, Fig. 9). Petitioner also contends that Gilmore’s voice gateway (application server) generates the voice representations (e.g., audio output from interpreter 208b and text-to-speech generation component 208d) by executing VoiceXML applications to generate voice representations of information derived from the applications. *See id.* at 29–30 (citing Ex. 1005 ¶¶ 39, 43, 44, 48, 52, 103, Fig. 9). According to Petitioner, this is accomplished by Gilmore’s voice gateway either accessing an audio file at a specified URL or by employing text-to-speech to translate and play text included in a prompt instruction, resulting in an audio output such as the “What would you like to do?” query in Figure 9. *See id.* at 29–31 (citing Ex. 1005 ¶¶ 39, 44, 48, 64, 70, 74, 77, 103, Fig. 9).

Petitioner then contends that, “Dodrill (like Gilmore) discloses executing an IVR application on remote servers.” *Id.* at 32 (citing Ex. 1006, 9:12–24; Ex. 1005 ¶¶ 33–34, 39–48). In particular, Petitioner contends “Dodrill teaches that, rather than sending audio directly, the system can send the voice representation as an embedded .wav file along with an instruction to play the voice representation in script processed by the user device.” *Id.*

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(citing Ex. 1006, 8:18–24, 11:66–12:30, Fig. 7). Dodrill’s XML tags include instructions to present information to the user, such as to play audio files using a “PROMPT” or “autostart” instruction. *Id.* (citing Ex. 1006, 11:66–12:30, Fig. 7; Ex. 1021 ¶ 148).

In response, Patent Owner focuses its arguments on Petitioner’s showing as to Gilmore, arguing that “in *Gilmore* the cited ‘request’ is an audio prompt—processed on the application server and played over the phone via a voice gateway—for *user interaction*, not for a processing service. The ‘requested’ activity is a user activity, not a device activity.” PO Resp. 44 (citing Pet. 33). Patent Owner acknowledges that the ’816 patent discusses VoiceXML scripts, but argues that, when the ’816 patent does so, “it makes clear that the system of the ’816 [p]atent—unlike traditional VoiceXML systems—involves distributing some of the processing functions to the client side for execution.” *Id.* at 45 (citing Ex. 1001, 6:60–65 (“In this example, client 18*a* provides application independent processing services to Voice XML-based application 28 executing remotely.”)). In contrast, Patent Owner continues, “all processing of instructions in *Gilmore* (and certainly all processing cited in the Petition) is done on the host side—*i.e.*, by the application server.” *Id.* at 46 (citing Ex. 1005 ¶ 40). In that regard, Patent Owner challenges Petitioner’s reliance on Gilmore’s text-to-speech conversion, stating that such conversion and subsequent audio playback is performed *by the application server*, and not by the client device. *Id.* at 46–47. Patent Owner further argues that any interaction in Gilmore by a human on the client side, such as spoken commands or responses to the application server’s audio prompts, are not a “processing service” within the scope of the ’816 patent claims. *See id.*

Petitioner responds by pointing out that the Petition relies on Gilmore in combination with Dodrill, and asserts that Dodrill teaches sending executable instructions to the user device, thus meeting the construction of “request for processing services” adopted herein. *See* Reply 20 (citing Pet. 31–36). Patent Owner does not particularly challenge Dodrill’s teachings, but asserts that the combination fails because Petitioner has failed to demonstrate that the ordinarily skilled artisan would have combined the teachings of Gilmore with Dodrill. *See* PO Resp. 43–48; Sur-reply 12–13, 19–22. We address those arguments below. *See infra* § III.E.3.

We are persuaded by Petitioner’s arguments and evidence that the combination of Gilmore and Dodrill teaches or suggests an application server that communicates a request for processing service to a communication device, as recited in claim 1 (limitation 1h). In particular, Gilmore teaches the voice gateway generates a voice representation of information derived from executing a VoiceXML application, which it sends as audio prompts to the user communication device. Ex. 1005 ¶¶ 39, 43, 44, 48, 52, 103, Fig. 9. Petitioner persuasively points to teachings from Dodrill for the user communication device receiving the voice representation in software and executing an instruction in software on the user device to play the voice representation as audio for the user, as also recited in claim 1 (limitation 1i). Pet. 32 (citing Ex. 1006, 8:18–24, 11:66–12:30, Fig. 7). Dodrill, for example, discloses an application server generating a web page for a user’s browser, wherein the web page includes media control to be performed on the user’s device by a plug-in resource. Ex. 1006, 11:61–12:4. Dodrill’s plug-in resource can play audio files for the user and also receive user input that the resource then matches to an input pattern; the resource may also record and capture user voice input and upload that input. *Id.* at

12:5–30. In that regard, we credit, and rely on, the testimony of Mr. Lipoff to the effect that the ordinarily skilled artisan would have understood that Dodrill discloses an application server sending instructions to a user device, to be executed on the user device for implementing various functionality, such as presenting audio or display prompts for a user. Ex. 1021 ¶¶ 112–114.

For these reasons, we find that Petitioner has demonstrated by a preponderance of the evidence that the combination of Gilmore and Dodrill teaches or suggests an application server sends a “request for processing service” to a communication device, as recited in claim 1 (limitation 1h), and further wherein the request for processing service “comprises an instruction to present a user . . . the voice representation,” as also recited in claim 1 (limitations 1i).

2. The limitations of the dependent claims

Having decided that the combination of Gilmore, Dhara, and Dodrill teaches or suggests each and every limitation of claim 1, we turn to the remaining challenged claims in this ground of unpatentability—i.e., claims 2–6 and 11–13. Claims 2–6 and 11–13 depend, directly or indirectly, from claim 1. As such, they also include the above-discussed limitations. Patent Owner presents a separate argument for only dependent claim 3. *See* PO Resp. 48–50. We address that claim individually below.

a) Dependent claims 2, 4–6, and 11–13

As to claims 2, 4–6, and 11–13, we find that Petitioner persuasively maps the limitations of these dependent claims to the cited art (and to the

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testimony of Mr. Lipoff in support of the combination of references).¹⁶ *See* Pet. 36–38, 40–46 (citing, for **claim 2**: Ex. 1005 ¶¶ 3, 33, 37, 39, 40, 44, 48–49, 70, Figs. 9–14; Ex. 1021 ¶¶ 165–175; for **claim 4**: Ex. 1005 ¶¶ 40, 46, 52–103; Ex. 1021 ¶¶ 193–198; for **claim 5**: Ex. 1005 ¶¶ 34, 40, 47; Ex. 1021 ¶¶ 199–204; for **claim 6**: Ex. 1005 ¶¶ 30–31, 33–35, 39–48, 50; Ex. 1009 ¶¶ 19, 42; Ex. 1021 ¶¶ 205–213; for **claim 11**: Ex. 1005 ¶¶ 32, 41; Ex. 1021 ¶¶ 214–221; for **claim 12**: Ex. 1005 ¶ 52; Ex. 1021 ¶¶ 222–226; for **claim 13**: Ex. 1021 ¶¶ 227–230). Again, Patent Owner does not present separate and specific arguments for any of these dependent claims. *See* PO Resp. 33–45 (presenting arguments only as to certain limitations of claim 1); *see also id.* at 61 (arguing that the dependent claims not specifically addressed are nonobvious because the claims from which they depend are also nonobvious). We adopt the contentions set forth in the Petition and in Mr. Lipoff’s Declaration as mapped to the limitations of the challenged claims as our own findings. *NuVasive*, 841 F.3d at 974.

b) Dependent claim 3

Claim 3 depends from claim 1 and recites that “the repository comprises a database, and the application is stored in the database.” Ex. 1001, 14:10–12. For the reasons discussed below, we find that Petitioner has demonstrated by a preponderance of the evidence that Gilmore, alone or in combination with Dodrill, teaches or suggests that the applications are stored in a repository comprising a database, as recited in claim 3.

¹⁶ Petitioner provides citations for limitations of certain claims by reference to earlier sections of the Petition discussing similar elements of other claims.

Petitioner presents evidence that Gilmore discloses a repository having access to one or more applications maintained in a data store coupled to the repository, and Gilmore alone, or in combination with Dodrill, renders obvious the data store being a “database.” Pet. 38 (citing *id.* at 21–23). In particular, Petitioner provides an annotated version of Gilmore’s Figure 2, reproduced below. Pet. 22.

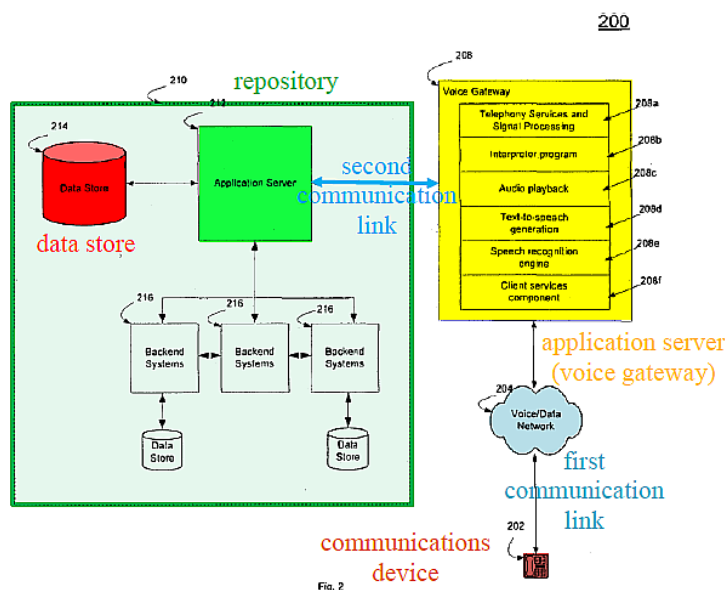


Fig. 2

Figure 2 (annotated by Petitioner) is a diagram of an exemplary voice communications system. Ex. 1005 ¶ 17.

By reference to annotated Figure 2, reproduced above, Petitioner presents evidence that Gilmore discloses that voice “gateway 208 receives script files from the application server 212 which obtains the files from the data store 214.” Pet. 21–22 (citing Ex. 1005 ¶ 46). Petitioner presents evidence that voice gateway 108/208 (application server, annotated yellow above) receives the voice application to be executed (e.g., VoiceXML scripts) over data network 112 (second communication link, annotated blue above, double-headed arrow in Figure 2) from application server 212 (annotated bright green above), which corresponds to the claimed

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“repository.” *Id.* (citing Ex. 1005 ¶ 52). Petitioner presents evidence that application server 212 (repository) accesses the voice applications maintained in data store 214 (annotated red above), as shown by the double-headed arrow in Figure 2, and sends the application to voice gateway 108/208. *Id.* at 22 (citing Ex. 1005 ¶¶ 45–46, 52, 75); *see also id.* at 38 (citing Ex. 1005 ¶ 70).

As to the claimed limitation “repository compris[ing] a database,” Petitioner contends Gilmore’s data store 214 is a database, even though not explicitly referred to as such, and further contends that, “[r]egardless, Dodrill teaches storing IVR applications, such as XML voice applications, in database 96.” *Id.* at 38 (citing Ex. 1005 ¶¶ 40–42; Ex. 1006, Fig. 8, 9:16–24, 12:36–42; Ex. 1021 ¶¶ 176–179).

Patent Owner challenges Petitioner’s showing by arguing that the Petition fails to identify a database of applications:

Petitioner identifies script files within *Gilmore*’s “data store” as potentially satisfying this element, but *Gilmore* is clear that while its VoiceXML scripts are *used by* an application, they are not themselves applications. As Petitioner acknowledges, *Gilmore* defines the data store as “a storage device that stores files necessary for execution of the voice application,” such as “script files, prompt files, grammar files,” etc. By defining the script files as files “necessary for execution of the voice application,” *Gilmore* makes clear that the files are *not* “the voice application” itself.

PO Resp. 48–49 (citing Pet. 22–23; Ex. 2029 ¶ 133).

As with Patent Owner’s other arguments regarding the “application” limitations, Patent Owner’s argument here is unavailing because it is premised on an overly narrow interpretation of the term “application,” which we have not adopted. *See supra* § III.C.3. Because we agree with Petitioner that Gilmore’s VoiceXML scripts fall within the scope of an “application,”

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as recited in the '816 patent claims, we also agree, for the reasons stated above, that Gilmore's disclosure of the repository being coupled to a data store satisfies the claim's recitation of a repository having access to a database. *See* Pet. 38; Ex. 1005 ¶ 42 ("The data store 214 is a storage device that stores files necessary for execution of the voice application . . . includ[ing] script files, prompt files, grammar files, and text-to-speech (TTX) text files."). Aside from arguing that the type of files stored in Gilmore's data store (e.g., VoiceXML scripts) are not "applications," Patent Owner does not challenge Petitioner's evidence showing that Gilmore's data store satisfies the database limitation. *See* PO Resp. 48–49. We further find, in the alternative, that even if Gilmore's data store did not qualify as a database, Dodrill teaches storing interactive voice applications, such as XML voice applications, in "application [document] database [96]." Ex. 1006, 9:16–24, 12:36–42. For these reasons, we find that Petitioner has demonstrated by a preponderance of the evidence that Gilmore, alone or in combination with Dodrill, teaches or suggests that the applications are stored in a repository comprising a database, as recited in claim 3.

3. *Motivation to combine/reasonable expectation of success*

Even "[i]f all elements of the claims are found in a combination of prior art references," "the factfinder should further consider whether a person of ordinary skill in the art would [have been] motivated to combine those references, and whether in making that combination, a person of ordinary skill would have [had] a reasonable expectation of success." *Merck & Cie v. Gnosis S.P.A.*, 808 F.3d 829, 833 (Fed. Cir. 2015). The "motivation to combine" and "reasonable expectation of success" factors are subsidiary requirements for obviousness subsumed within the *Graham* factors. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007).

As noted above, Petitioner relies primarily on Gilmore as disclosing the limitations of the challenged claims, but additionally relies on the teachings of Dhara or Dodrill in combination with Gilmore as to certain limitations of claim 1—namely, limitation 1c2 (the request from the communication device comprising packetized voice data) and limitations 1h and 1i (the application server communicating a request for processing service to the communication device), respectively. *See* Pet. 17–20 (limitation 1c2), 31–36 (limitations 1h and 1i). Petitioner also relies on the combination of Gilmore and Dodrill for teaching claim 3 (a repository having access to a database). *Id.* at 38–40. We address below Petitioner’s showing as to the motivation for combining the teachings of these references by limitation, followed by Patent Owner’s challenges to that showing.

a) Packetized voice data (limitation 1c2)

Even though Gilmore describes its data network as “capable of carrying packetized data,” Gilmore does not explicitly disclose that the request from device 102/202 to establish a communication session comprises packetized voice data. *See* Ex. 1005 ¶¶ 31, 35; Pet. 17–18. Dhara, however, explicitly discloses an “audio command” “communicated using ‘voice signals’ sent ‘over the IP network 104’ ‘in the form of data packets.’” Pet. 18 (citing Ex. 1009 ¶¶ 19, 30–31, 42; Ex. 1021 ¶¶ 106–107). As noted above, Patent Owner does not expressly challenge Petitioner’s showing that a request from a communication device comprising “packetized voice data” as recited in limitation 1c2 is taught by the combination of Gilmore and Dhara. *Supra* § III.E.1.a. Patent Owner does, however, challenge

Petitioner's stated rationale combining those two references. PO Resp. 57–58.

As to motivation to combine, Petitioner presents evidence and articulated reasoning supporting a finding that an ordinarily skilled artisan “would have found it obvious to establish a communication session based on a request comprising packetized voice data, as taught by Dhara, because this would improve the user’s options for accessing the system.” Pet. 18 (citing Ex. 1021 ¶ 108). In particular, Petitioner presents evidence, including the testimony of Mr. Lipoff (which we credit), that transmitting the request “as a packetized spoken command” would “increase efficiency of retrieving the script for execution by eliminating the need for an initial interaction with gateway 108/208 to prompt the user to identify the desired website or database.” *Id.* at 19 (citing Ex. 1021 ¶ 113).

We determine that Petitioner has set forth sufficiently why an ordinarily skilled artisan would have been motivated to combine the teachings of Gilmore and Dhara in the manner asserted by Petitioner; for example, to increase efficiency, minimize the number of necessary communications between client and server, improve access, and increase available design options for presenting voice information to the user. *Id.* at 19–20; *see also* Ex. 1021 ¶¶ 110–115. Indeed, Dhara explains that VoiceXML systems offer “flexibility to create and customize audio initiated dialogs” on the user device. Ex. 1009 ¶ 6. We also credit Mr. Lipoff’s testimony that an ordinarily skilled artisan would have reasonably expected success with modifying Gilmore’s system with Dhara’s packetized voice data, especially given that doing so (i.e., sending the request as packetized voice data) would require only conventional techniques used in their ordinary and expected manner. Ex. 1021 ¶¶ 116–117.

As to combining the teachings of Gilmore and Dhara, Patent Owner argues the ordinarily skilled artisan would not have been motivated to “combine the features of the two systems” into a single system because they “independently accomplish similar functions—namely, offering IVR/VoiceXML functionality,” and “each device independently operates effectively on its own.” PO Resp. 57. Patent Owner further contends “Petitioner fails to provide sufficient evidence or technical reasoning to establish that the system of *Gilmore* is inadequate for providing IVR/VoiceXML functionality, such that further modification of the system to place those components on a communication device is necessary.” *Id.* at 58. Petitioner counters that “the law does not require inadequacy for a skilled artisan to combine systems.” Reply 27 (citing *KSR*, 550 U.S. at 415, 418–21).

We agree with Petitioner. Where, as here, the combination moves the processing from one known location to another, a finding of obviousness is supported. *See Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1338–42 (Fed. Cir. 2020) (holding that moving the location of processing from a remote server to a user device was obvious, regardless of underlying technological compatibility). Moreover, in making this argument, Patent Owner does not address any of the Petition’s specified motivations for the combination or dispute that a skilled artisan would have expected success in the combination. *See* Pet. 19–20. Rather, Patent Owner relies on *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1369 (Fed. Cir. 2012), for the proposition that hindsight is the only reason to combine references where an advantage provided by one reference is redundant to another reference. PO Resp. 58. Patent Owner’s argument and citation are unavailing. The court in *Kinetic Concepts* found no motivation to combine

in that case because the record was “devoid of any reason” to combine the references. 688 F.3d at 1369. Here, in contrast, we find that the Petition provides persuasive reasons based on the references’ disclosures and testimony of Mr. Lipoff to combine Gilmore and Dhara—none of which Patent Owner persuasively rebuts. *See* Pet. 19–20; Ex. 1021 ¶¶ 110–117.

b) Application server communicates a request for processing service to the communication device (limitations 1h and 1i)

As explained above, we are persuaded by Petitioner’s evidence that the combination of Gilmore and Dodrill teaches that the application server is configured to transmit the voice representation over the first communication link to a communication device, and that the request for processing includes an instruction to present the voice representation to the user, as recited in limitations 1h and 1i, respectively. *Supra* § III.E.1.b.3; *see also* Pet. 31–33; Ex. 1005, Fig. 9, ¶¶ 33–34, 39–48, 103; Ex. 1006, Fig. 7, 8:18–24, 9:12–24, 11:61–12:30; Ex. 1021 ¶¶ 145–150.

As to motivation for the combination, Petitioner presents evidence and articulated reasoning that the ordinarily skilled artisan would have had a reason to combine Dodrill’s transmission of an instruction to present information to the user with Gilmore’s interactive voice response system because: (1) both Gilmore and Dodrill describe executing an IVR application on remote servers, with Dodrill describing different options for presenting information, including sending the user an embedded .wav file along with an instruction to play the voice representation in script processed by the user device, Pet. 32 (citing Ex. 1006, 8:18–24, 11:66–12:30, Fig. 7; Ex. 1021 ¶ 147); (2) the ordinarily skilled artisan would have understood that incorporating Dodrill’s embedded voice representation and instructions in Gilmore’s request would have the effect of distributing some processing

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tasks, thereby “freeing up resources at gateway 108/208 by not having to retrieve and play the voice scripts and stream them in audio form,” *id.* at 33 (citing Ex. 1021 ¶ 150); and (3) incorporating Dodrill’s option to send an executable with instructions to play an audio file would add additional functionality to Gilmore’s system “so as to improve access to voice-browsing (as taught by Dodrill) and to increase the available options for executing voice applications” and to “reduc[e] the computation load on the application server,” *id.* at 33–34 (citing Ex. 1021 ¶¶ 153, 156–157).

Petitioner presents evidence, including the testimony of Mr. Lipoff (which we credit), that an ordinarily skilled artisan would have had a reasonable expected success with the combination, because modifying Gilmore’s system to include transmitting an embedded voice representation and a request for processing as taught by Dodrill’s merely combines known elements in an expected manner. Pet. at 35–36 (citing Ex. 1021 ¶¶ 161–164).

For these reasons, we determine that Petitioner has sufficiently set forth articulated reasoning with sufficient rational underpinning as to why an ordinarily skilled artisan would have had reason to combine Gilmore and Dodrill, with a reasonable expectation of success. Dodrill and Gilmore both describe presenting voice prompts to a user on the user’s device. *Id.* at 33; Ex. 1021 ¶ 151. In particular, Gilmore describes playing voice scripts to prompt a user for information. Ex. 1005 ¶¶ 33, 115. And Dodrill teaches sending the user an executable .wav file that contains instructions to present the voice prompts on the user’s computer. Ex. 1006, 8:17–22, 11:61–12:30. Petitioner additionally presents the testimony of Mr. Lipoff (which we find persuasive and credit) in support of its contention that incorporating Dodrill’s option into Gilmore’s system would result in merely adding

functionality to Gilmore’s system in which “[t]he executed instruction does not change, but instead merely requires the voice-enabled device to execute the instruction, which was known and conventional to the artisan.” Pet. 35–36 (citing Ex. 1021 ¶ 163). We address Patent Owner’s challenges to the combination of Gilmore and Dodrill below. *Infra* § III.E.3.d.

c) Database coupled to a repository (claim 3)

As explained above, we find that, even if Gilmore’s data store did not qualify as a database, Dodrill teaches storing interactive voice applications, such as XML voice applications, in “application document database 96.” *See supra* § III.E.2.b (citing Ex. 1006, 9:16–24, 12:36–42). Thus, the combination of Gilmore and Dodrill teaches or suggests the database limitation of claim 3.

As to motivation for the combination of Gilmore and Dodrill, Petitioner presents evidence and articulated reasoning that the ordinarily skilled artisan would have been motivated to combine Dodrill’s database with Gilmore’s storage because: (1) both are directed to remotely-executing voice applications; and (2) the ordinarily skilled artisan would have understood that using the structure format of Dodrill’s database would have made retrieving voice applications more efficient. Pet. 39 (citing Ex. 1021 ¶¶ 181–184). Relying on the testimony of Mr. Lipoff, Petitioner explains that databases were “well-known as of the priority date of the ’816 patent,” and an ordinarily skilled artisan would have understood that using Dodrill’s database as Gilmore’s data store “would result in the ordinary and expected operation of storing applications to be retrieved for execution.” *Id.* at 39–40 (citing Ex. 1021 ¶¶ 186–189).

We find that Petitioner has articulated reasoning supported by sufficient rational underpinning to support the combination of Gilmore and

Dodrill as to claim 3 with a reasonable expectation of success. We address Patent Owner's challenges to the combination of Gilmore and Dodrill below.

*d) Patent Owner's arguments challenging
the combination of Gilmore and Dodrill*

Patent Owner raises several points in arguing that the ordinarily skilled artisan would not have been motivated to combine the teachings of Gilmore and Dodrill. PO Resp. 51–57, 60–61. In particular, Patent Owner contends that: (1) Gilmore and Dodrill are non-analogous art, *id.* at 52–53; (2) combining the teachings of Gilmore and Dodrill would require fundamental changes to one or both references, *id.* at 53–56; (3) Gilmore teaches away from Dodrill, *id.* at 56–57; and (4) Petitioner's proposed combination is motivated by hindsight, *id.* at 60–61. We address each of these contentions in turn below.

(1) Non-analogous art

Patent Owner's argument that Gilmore and Dodrill are non-analogous art is premised on three points: (1) Gilmore relates to live, interactive telephone calls to an IVR system, whereas Dodrill relates to a user's interaction with a web browser to retrieve voice mails over the Internet; (2) Gilmore's execution environment is an application server, whereas Dodrill's execution is done on a web browser on a client device; and (3) Gilmore and Dodrill are not both directed to remotely-executing voice applications because Gilmore's VoiceXML scripts are not applications, and Dodrill defines "XML applications" differently than Gilmore and Petitioner do. PO Resp. 52–53 (citing Ex. 2029 ¶¶ 139–143).

The test for determining whether a prior art reference constitutes analogous art to the claimed invention is: (1) whether the prior art is from the same field as the inventor's endeavor, regardless of the problem

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addressed; and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). A reference is "reasonably pertinent" to a problem if it "logically would have commended itself to an inventor's attention in considering his problem." *In re Icon Health & Fitness, Inc.*, 496 F.3d 1374, 1379–80 (Fed. Cir. 2007) (quoting *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992)).

Patent Owner's contentions are unavailing because, as Petitioner correctly notes, Patent Owner has not addressed either prong of the test for nonanalogous art. *See* Reply 23. In particular, Patent Owner has not addressed whether either Gilmore or Dodrill are within the *field of the inventor's endeavor*, much less whether they are reasonably pertinent to that field. Rather, Patent Owner compares the fields of endeavor of Gilmore and Dodrill to *each other*, which misses the mark. *See* PO Resp. 52–53.

In any event, we agree with Petitioner that both Gilmore and Dodrill are in the same field of endeavor as the '816 patent, which is described as "the field of communication systems, and more particularly to a method and system that enables a communication device to remotely execute an application." Ex. 1001, 1:20–23; *see* Reply 23. Gilmore and Dodrill both describe methods and systems enabling communication devices to remotely execute applications on voice gateway 108/208 (Gilmore) or gateserver 92 (Dodrill). *See* Pet. 5–10, 33–36, 39–40; Ex. 1005 ¶¶ 31, 33–34, 39–48; Ex. 1006, Abstract, 5:6–24, 9:12–24, 11:19–26, 11:61–12:30, Fig. 7. Petitioner also notes, and we agree, that Patent Owner's argument that Dodrill's interactive voice applications may be voicemail applications, PO Resp. 52–53, is irrelevant because nothing limits the '816 patent, Gilmore,

or Dodrill to particular types of applications. *See* Reply 23–24. Rather, all three generally disclose remotely executed interactive voice application systems, making Gilmore and Dodrill analogous art because they are in the same field of endeavor of the ’816 patent.

Based on the record before us, we find that both Gilmore and Dodrill are analogous art to the field of invention of the ’816 patent.

(2) *Fundamental changes to the prior art*

Patent Owner next argues that “[a]lthough both *Gilmore* and *Dodrill* include disclosure concerning XML, the operations of their disclosed embodiments are fundamentally different, and combining them would require changes to one or both references that would render them unsuitable for their intended purpose.” PO Resp. 53–54 (citing Ex. 2029 ¶ 144).

First, Patent Owner argues that, because Gilmore’s applications (VoiceXML scripts) are not the same thing as the applications of Dodrill (web pages), the ordinarily skilled artisan would not have been motivated to use Dodrill’s database with Gilmore. *Id.* at 54. In so arguing, Patent Owner takes a literal approach, asserting that “[a]pplying *Dodrill* to *Gilmore* would result in *Dodrill*’s web pages being sent to *Gilmore*’s voice application—which expects VoiceXML scripts to process,” and vice versa—“[a]pplying *Gilmore*’s VoiceXML scripts to *Dodrill* would result in VoiceXML scripts being sent directly to a web browser—which expects an HTML page.” *Id.* at 54–55.

Patent Owner additionally argues that “Petitioner fails to explain how the web page of *Dodrill* would be applied to the alleged communication device of *Gilmore*, which serves the function of a telephone.” *Id.* at 55 (citing Ex. 1005 ¶ 30, Figs. 1–2). Patent Owner continues, “[t]here is simply no disclosure in *Gilmore* that would support the HTML-based voice

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messaging web page of *Dodrill* without significant redesign and experimentation, none of which is discussed in the Petition or in Petitioner's expert's declaration." *Id.* (citing Ex. 2029 ¶ 147).

Patent Owner's arguments are unavailing, as a proposed combination of references is not limited to a bodily incorporation of the features of one reference into another. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference."); *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.") (emphasis omitted). Here, Patent Owner's assertion that Gilmore's VoiceXML scripts and *Dodrill*'s web pages are not inter-operative focuses improperly on the bodily incorporation of Gilmore's VoiceXML scripts with *Dodrill*'s web pages, rather than what these references would have taught to one of ordinary skill in the art. Similarly, with regard to the questions Patent Owner poses to address design changes needed to incorporate *Dodrill*'s teachings with Gilmore, PO Resp. 55–56 (citing Ex. 2029 ¶ 148), we find such alleged changes are, to a large extent, irrelevant, as they are based on Patent Owner's flawed premise of bodily incorporation.

We find that Petitioner has shown persuasively what a person of ordinary skill in the art, who is also a person of ordinary creativity, would have appreciated from the combined teachings of the references. *See* Pet. 33–36, 39–40; *see also KSR*, 550 U.S. at 421. And, contrary to Patent Owner's suggestion, the Petition does not rely solely on a "telephone call" in Gilmore, but also relies on data network connections (e.g., VoIP, IP) in Gilmore and *Dodrill* that send voice and data. Pet. 12, 17, 20, 42. Gilmore and *Dodrill* both disclose remote application execution over data

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networks using IP phones, PDAs, and voice-enabled computers. Ex. 1005 ¶¶ 30–31; Ex. 1006, 8:18–24, 11:61–12:30. Dodrill discloses that user devices can receive data and voice information and include browsers and voice resource software to execute instructions at the user device (e.g., VoiceXML, XML)—a “request for processing service.” Ex. 1006, 7:60–62, 9:6–11, 11:61–12:30; *see also* Ex. 1009 ¶¶ 20–21, 23 (confirming VoiceXML instruction execution on a user device using a browser). Petitioner’s combination of Gilmore and Dodrill merely moves the location of processing from one known location (remote server) to another (user device), supporting a finding of obviousness. *Uber Techs.*, 957 F.3d at 1338–42; *see also KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”).

We also find credible and persuasive the testimony of Mr. Lipoff on these issues. For example, we credit Mr. Lipoff’s testimony that the ordinarily skilled artisan would have had reason to combine Dodrill’s instruction to present voice presentation to the user as part of the request for processing with Gilmore’s interactive voice response system because it would “improve access to voice-browsing (as taught by Dodrill) and to increase the available options for voice applications.” Ex. 1021 ¶ 153. We also credit Mr. Lipoff’s testimony that the ordinarily skilled artisan would have known that “[i]ncorporating Dodrill’s alternative to sending an embedded audio file (voice representation) and an instruction to present the audio would result in merely adding known functionality to Gilmore’s system.” *Id.* ¶ 161. We also credit Mr. Lipoff’s testimony that “[t]he executed instruction does not change, but instead merely requires the voice-

enabled device to execute the instruction,” and, therefore, would have been considered conventional and expected to an ordinarily skilled artisan. *Id.* ¶¶ 162–164.

For the foregoing reasons, we disagree with Patent Owner that combining Dodrill’s teachings with Gilmore would have required changes to either system that would have been beyond the skill of the ordinarily skilled artisan.

(3) *Teaching away*

Patent Owner also argues that the systems of Gilmore and Dodrill are “fundamentally different,” basing this contention on statements in the Gilmore provisional application (Exhibit 2028) that distinguish web applications and voice applications. PO Resp. 56–57 (citing Ex. 2028, 6, 2). Patent Owner then states that Gilmore’s system has a host system with an application server, which Patent Owner states is a “fundamentally different type of system than *Dodrill*.” *Id.* at 57 (citing Ex. 2029 ¶ 149).

A reference teaches away from a combination when, for example, a person of ordinary skill in the art would be discouraged from following the path set out in the reference, or would be led in a direction divergent from that chosen by the inventor. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). “[I]n general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant.” *Id.*

Patent Owner’s arguments are both conclusory and legally unavailing. Even assuming that Gilmore and Dodrill disclose different types of systems, being “different” is not teaching away, which “requires ‘clear discouragement’ from implementing a technical feature.” *Univ. of Md. Biotechnology Inst. v. Presens Precision Sensing GmbH*, 711 F. App’x 1007,

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1011 (Fed. Cir. 2017) (quoting *In re Ethicon, Inc.*, 844 F.3d 1344, 1351 (Fed. Cir. 2017)). Patent Owner does not identify anything in Gilmore or Dodrill that discourages sending executable instructions to Gilmore’s devices. Patent Owner’s arguments also rely on differences between graphical and voice interfaces, PO Resp. 56–57, which are irrelevant because both Gilmore and Dodrill describe voice interface systems, not graphical ones, to remotely execute interactive voice applications. *See* Pet. 5–13, 31–32. Furthermore, even considering the Gilmore provisional application, we note that it confirms the “tremendous similarities” in the systems, explaining that “VoiceXML-based voice technologies are designed to work in the same general model used for Web pages” and are “interpreted in a browser (voice gateway),” like Dodrill’s system and device browser. Ex. 2028, 8, 27.

(4) *Hindsight*

Finally, invoking the testimony of Dr. Rhyne, Patent Owner argues that “Petitioner’s approach to proving obviousness represents an improper use of hindsight in a deliberate attempt to fish for disclosure in the prior art based on the teachings of the ’816 [p]atent rather than through [an ordinarily skilled artisan’s] understanding of the art.” PO Resp. 60 (citing Ex. 2029 ¶¶ 139–142). We disagree. As discussed above, we find that Petitioner has articulated reasoning supported by evidentiary bases as to why the ordinarily skilled artisan would have combined the references in the manner proposed by Petitioner. In that regard, Petitioner’s reasoning does not rely only on knowledge gleaned from the ’816 patent’s disclosure. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) (“Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was

within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper."'). We find that Petitioner's showing is not premised on an improper hindsight reconstruction.

4. Summary

After having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–6 and 11–13 are unpatentable over the combination of Gilmore, Dodrill, and Dhara. In particular, we find that Petitioner has demonstrated sufficiently that the teachings of Gilmore and Dodrill and/or Dhara account for all the limitations of the claims, have been properly combined, and that an ordinarily skilled artisan would have found it obvious to combine these teachings in the manner proposed by Petitioner.

F. Grounds 2, 3, 5, 6, and 10: Obviousness over Gilmore, Creamer, Dhara, Fawcett, Dodrill, Ladd

Petitioner contends that claims 14–19 are unpatentable under 35 U.S.C. § 103(a) over the combination of: Gilmore and Creamer (Ground 2); Gilmore, Creamer, and Dhara (Ground 3); Gilmore, Creamer, and Fawcett (Ground 5); Gilmore, Creamer, and Dodrill (Ground 6); and Gilmore, Creamer, Dodrill, and Ladd (Ground 10). Pet. 46–56, 78. Claim 14 is independent, and claims 15–19 depend, either directly or indirectly, from claim 14. *See* Ex. 1001, 14:47–15:15.

Limitation 14g, similar to limitation 1h, recites “*a request for processing service* to the at least one communication device.” *Id.* at 15:5–7 (emphasis added). As discussed above, we construe “processing service” as “a computing process performed by a communication device for all or part

of the application.” *Supra* § III.C.2 (emphasis added). And, based on that construction, we determine that the *combination* of Gilmore and Dodrill teaches or suggests an application server that sends a “request for processing service” to a communication device. *Supra* § III.E.1.b.3. Specifically, we find that Dodrill teaches sending executable instructions to the user device and, thus, meets our construction of “request for processing services.” *Id.*

1. Claims 14–17 (Grounds 2, 3, and 5)

In Grounds 2, 3, and 5, Petitioner does not rely on, or cite to, Dodrill. *See* Pet. 46–56. Instead, Petitioner relies exclusively on Gilmore for teaching each element of claim 14, except for limitations 14a–14d. *See id.* at 46 (stating that “Gilmore teaches *each element* of claim 14, but does not expressly disclose a plurality of application servers” as recited in limitations 14a–14d (emphasis added)).¹⁷ As to limitation 14g, Petitioner contends that “Gilmore discloses that at least one of the plurality of application servers is configured to communicate a request for processing service (e.g., a prompt or message to which the user can respond) to communication device 102/202,” but again, makes no mention of the teachings of Dodrill. *Id.* at 52 (citing Ex. 1021 ¶ 254). Moreover, in its Reply, Petitioner emphasizes that “the Petition relies on the combination of Gilmore and Dodrill to send executable instructions, which meets both [Patent Owner’s] and the district court’s constructions of ‘request’ and ‘processing service,’” *but only with respect to limitations 1h and 1i*. Reply 20 (citing Pet. 31–36).

¹⁷ Limitations 14a–14d of claim 14 relate to a “plurality of application servers.” Ex. 1001, 14:48–65. Petitioner relies on the teachings of Creamer as “render[ing] [limitations 14a–14d] obvious.” Pet. 46 (citing Ex. 1021 ¶¶ 231–255); *see also infra* § III.G.

We agree with Patent Owner that Gilmore *alone* fails to teach or suggest “request for processing services,” recited in limitation 14g, because, in the portions of Gilmore on which Petitioner relies, *see* Pet. 52; *id.* at 31 (citing Ex. 1005, Fig. 9, ¶¶ 28, 33–34, 39–48, 103), the application server, rather than the communication device, processes all instructions, *see* PO Resp. 46; Sur-reply 12 & n.2. For example, Gilmore teaches that “[t]he application code *executed by the application server 212* coordinates which scripts to send to the voice gateway 208” and “[t]he *application server 212* frequently processes the scripts before sending the processed scripts to the voice gateway 208.” Ex. 1005 ¶ 40 (emphases added). As noted above, Petitioner does not point us to any disclosure in Gilmore, either alone or in combination with Creamer and/or Dhara, that teaches or suggests this limitation without the addition of Dodrill. Because Petitioner’s showing is missing a prior-art reference necessary for teaching all limitations of claim 14, Grounds 2, 3, and 5 are deficient.

2. *Claims 18 and 19 (Grounds 6 and 10)*

Unlike the grounds of unpatentability immediately above, Petitioner does make reference to Dodrill in Grounds 6 and 10. Specifically, in Ground 6, Petitioner contends that claim 18 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Gilmore, Creamer, and Dodrill. Pet. 56. And, in Ground 10, Petitioner contends that claim 19 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Gilmore, Creamer, Dodrill, and Ladd. *Id.* at 78. But, in both of these grounds, like in Grounds 2, 3, and 5, above, Petitioner does *not* rely on Dodrill to teach limitation 14g’s recitation of “a request for processing service to the at least one communication device.”

Specifically, for claim 18 (Ground 6), Petitioner states that “[c]laim 18 depends from claim 14, which is rendered obvious *by Gilmore and Creamer*.” *Id.* at 56 (emphasis added). Petitioner then states that “[a]s explained in Sections V.A.4.i ([1h]-[1i]), Dodrill renders *this additional limitation* obvious.” *Id.* (emphasis added) (citing Pet. 31–36). We interpret “this additional limitation” to be the additional limitation recited in claim 18—i.e., “wherein the request for processing service comprises an instruction to present a user of the at least one communication device voice data or audio data.” *Id.*

Put differently, we interpret Petitioner’s argument as relying on the combination of Gilmore and Creamer to teach all limitations of claim 14, and on Dodrill to teach the additional limitation recited in claim 18 only. But, as explained immediately above, we do not find that the combination of Gilmore and Creamer teaches or suggests all limitations of claim 14, namely for the reason that Gilmore fails to teach or suggest “request for processing services” as we have construed it here. Although perhaps a close call, we decline to parse the Petition to present an argument Petitioner could have made but did not, because “the petitioner is master of its complaint.” *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018); *cf. Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1335 (Fed. Cir. 2020) (holding “that the Board erred by instituting *inter partes* review based on a combination of prior art references not advanced in [Petitioner’s] petition”).

Ground 10 suffers from the same infirmity, given that claim 19 depends from claim 18, and through reference to earlier sections of its Petition, Petitioner again relies only on Gilmore and Creamer to teach all limitations of the base independent claim—i.e., claim 14. Pet. 78.

3. *Summary*

For these reasons, after considering the entirety of the record, we determine that Petitioner has not shown by a preponderance of the evidence that claims 14–19 are unpatentable as having been obvious over the particular combinations of Gilmore, Creamer, Dhara, Fawcett, Dodrill, and Ladd as presented in the Petition.

G. Ground 4: Obviousness over Gilmore, Dhara, Dodrill, and Creamer

Petitioner contends that claims 7 and 8 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Gilmore, Dhara, Dodrill, and Creamer. Pet. 54. Claim 7 depends from claim 1, and recites that “the application server comprises a plurality of servers.” Ex. 1001, 14:23–24. Claim 8 depends from claim 7, and recites that that “the voice processing software is distributed across the plurality of servers.” *Id.* at 14:25–27.

As to claim 7, Petitioner acknowledges that Gilmore does not explicitly disclose that the voice gateway 108/208 (application server) comprises a plurality of servers, but contends that implementing the voice gateway 108/208 across a plurality of servers would have been obvious based on the teachings of Creamer. Pet. 54 (citing Ex. 1021 ¶¶ 262–264). Similarly, as to claim 8, Petitioner acknowledges that Gilmore does not explicitly disclose that its voice processing software program (e.g., text-to-speech generation component 208d and speech recognition engine 208e) could be distributed across a plurality of servers, but again contends that doing so would have been obvious to an ordinarily skilled artisan based on the teachings of Creamer. *Id.* (citing Ex. 1021 ¶¶ 265–268).

Patent Owner argues that Creamer “fails to disclose the claimed plurality of application servers,” because Creamer “provides no specifics regarding any configuration of a plurality of servers.” PO Resp. 50–51. We

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disagree. Creamer expressly teaches that an IVR system “can . . . be implemented by multiple servers in a distributed fashion.” Ex. 1010 ¶ 25. Creamer teaches that, in one embodiment, “the IVR system 125 can include a stand-alone solution contained within a single server interfacing directly with the telecom network 110 without being communicatively linked to the computer communications network 120.” *Id.* And, in another embodiment, “[t]he IVR system 125 can alternatively be implemented by *multiple servers* in a distributed fashion.” *Id.* (emphasis added). Thus, the teachings of Creamer clearly account for the “plurality of servers” recited in claims 7 and 8. *See, e.g., Beckman Instruments Inc. v. LKB Produkter AB*, 892 F.2d 1547, 1551 (Fed. Cir. 1989) (a reference is prior art for all that it teaches).

Relying on Mr. Lipoff’s Declaration, Petitioner also contends that an ordinarily skilled artisan would have been motivated to combine the teachings of Creamer with those of Gilmore, Dhara, and Dodrill, with a reasonable expectation of success. Pet. 54 (citing Ex. 1021 ¶¶ 262–268); *see also id.* at 50–52. In particular, Petitioner contends that “[d]istributing software applications across multiple servers was well known to the artisan,” and that implementing multiple servers in Gilmore’s system “would merely combine known elements to achieve an expected result.” *Id.* at 51–52 (citing Ex. 1021 ¶¶ 247–251). We agree with Petitioner, and credit Mr. Lipoff’s testimony, that an ordinarily skilled artisan “would have found it obvious to host each of” Gilmore’s applications “on separate servers (each executing its own ‘application’),” *id.* at 49, especially given that Creamer teaches that a distributed server system is an *alternative* to a “stand-alone solution contained within a single server,” Ex. 1010 ¶ 25; *see also* Ex. 1021 ¶ 242. We also credit and rely on Mr. Lipoff’s testimony that distributing Gilmore’s applications over a plurality of servers would have been desirable,

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because such a distributed system “would provide a more robust system that is less susceptible to software crashes and allow the gateway to serve a greater number of concurrent users.” Ex. 1021 ¶ 244; *see also* Pet. 50.

Patent Owner argues that an ordinarily skilled artisan would not have been motivated to combine the teachings of Gilmore and Creamer, because the proposed combination would have been inoperable. PO Resp. 58–60 (citing Ex. 2029 ¶¶ 152–154). In so doing, Patent Owner again takes a literal approach—arguing that Creamer utilizes a plurality of IVR servers so that one server is available for each phone line of a business phone system that includes multiple lines, and that “[t]his ‘distributed’ approach does not logically lend itself to application in *Gilmore’s* system.” *Id.* at 59.

But, as explained above, Petitioner’s proposed combination of Gilmore and Creamer does not require a bodily incorporation of the features of one of those references into the other. *Supra* § III.E.3.d.2. Moreover, as Petitioner contends and Patent Owner does not contest, distributing software applications across multiple servers was well known before the ’816 patent and would have required only ordinary skill to implement. Pet. 51–52; Ex. 1021 ¶¶ 247–251; *see also KSR*, 550 U.S. at 417 (describing “the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement” as obvious).

For these reasons, after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 7

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and 8 are unpatentable as having been obvious over the combination of Gilmore, Dhara, Dodrill, and Creamer.

H. Ground 7: Obviousness over Gilmore, Dhara, Dodrill and Ladd

Petitioner contends that claims 9, 10, 29, and 30 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Gilmore, Dhara, Dodrill, and Ladd. Pet. 57–70. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claims 9, 10, 29, and 30 are unpatentable as having been obvious over Gilmore, Dhara, Dodrill, and Ladd.

1. Claims 9 and 10

Claims 9 and 10 depend, either directly or indirectly, from claim 1, and therefore include the limitations of claim 1, discussed above in connection with Ground 1. *Supra* § III.E. Claim 9 specifies that the voice processing software program of claim 1 “comprises a voice recognition application, a speech-to-text application, and a text-to-speech application.” Ex. 1001, 14:28–31. And claim 10 specifies that the communication device “comprises a second voice recognition application configured to recognize at least one word spoken by a user of the at least one communication device.” *Id.* at 14:32–36. Petitioner contends that, to the extent Gilmore “does not explicitly disclose a speech-to-text application” as recited in claim 9, “Ladd renders this limitation obvious” by disclosing a speech-to-text application. Pet. 57–58 (citing Ex. 1021 ¶¶ 283–286). Petitioner also contends that Ladd discloses a voice recognition application, e.g., “voice browser [250] and/or RecServer software by Nuance Communications,” that “can be integrated into the communication devices to recognize spoken words,” as recited in claim 10. *Id.* at 60–61 (citing Ex. 1021 ¶¶ 293–299 (internal quotations omitted)).

Petitioner persuasively maps the limitations of claims 9 and 10 to the cited art. *Id.* at 57–61 (citing, for **claim 9**: Ex. 1005 ¶¶ 39, 50; Ex. 1016, Abstract, Fig. 3, 9:1–26, 9:44–51, 11:30–35, 20:5–10; Ex. 1021 ¶¶ 278–286; for **claim 10**: Ex. 1016, 11:48–49, 13:66–67, 14:17–23, 14:28–48; Ex. 1021 ¶¶ 293–299). Patent Owner does not present separate and specific arguments for these dependent claims. *See* PO Resp. 61 (arguing that the dependent claims not specifically addressed are nonobvious because the claims from which they depend are also nonobvious). We adopt the contentions set forth in the Petition and in Mr. Lipoff’s Declaration as mapped to the limitations of the challenged claims as our own findings. *NuVasive*, 841 F.3d at 974.

In addition to the reasons discussed above as to independent claim 1, *supra* § III.E.3, we also determine that Petitioner has made a sufficient showing that the references are properly combined and an ordinarily skilled artisan would have had a reasonable expectation of success in combining Ladd with Gilmore, Dhara, and Dodrill in the manner proposed by Petitioner. Specifically, Petitioner presents persuasive evidence and arguments, supported by Mr. Lipoff’s testimony (which we credit), that an ordinarily skilled artisan would have been motivated to incorporate Ladd’s speech-to-text application and voice-recognition software into Gilmore’s IVR system to “add/expand capability and facilitate processing,” and that doing so would merely require the use of commercially available software. Pet. 58–59 (citing Ex. 1021 ¶¶ 287–292).

2. Claims 29 and 30

Claim 29 is independent, and is directed to a method of providing responses in a communication system. Ex. 1001, 16:31–55. Claim 30 depends from claim 29, and recites additional method steps. *Id.* at 16:56–63.

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Petitioner contends that Gilmore teaches most limitations of claims 29 and 30, except for: limitation 29a, “which is rendered obvious by Dhara,” limitations 29b–29c, “which are rendered obvious by Ladd,” and limitation 29h, “which is rendered obvious by Dodrill.” Pet. 62 (citing Ex. 1021 ¶¶ 303–329), 68–70 (citing Ex. 1021 ¶¶ 330–337). In response, Patent Owner disputes Petitioner’s showing as to only limitations 29a and 29h, which we discuss below.

As to the undisputed limitations of claims 29 and 30, we find that Petitioner persuasively maps the limitations of these dependent claims to the cited art (and to the testimony of Mr. Lipoff in support of the combination of references). *See* Pet. 62–70 (citing, for **limitation 29b** and **limitation 29c**: Ex. 1005 ¶¶ 34, 51; Ex. 1016, 9:45–51, 20:5–18; Ex. 1021 ¶¶ 308–315; for **limitation 29d**: Ex. 1005 ¶¶ 45–46, 48, 52, 75 (by reference to limitation 1e); Ex. 1021 ¶ 317; for **limitation 29e**: Ex. 1005 ¶¶ 34, 51; Ex. 1021 ¶¶ 318–319; for **limitation 29f**: Ex. 1005, Figs. 1–2, ¶¶ 29, 31 (by reference to limitation 1a); Ex. 1021 ¶ 320; for **limitation 29g**: Ex. 1005 ¶ 31; Ex. 1006, Fig. 1, 3:27–28, 7:60–63, 9:55–68; Ex. 1021 ¶¶ 321–324; for **claim 30**: Ex. 1005 ¶¶ 33, 51–52, 103, Fig. 9; Ex. 1021 ¶¶ 330–337). Again, Patent Owner does not present separate and specific arguments for these limitations of claim 29, nor does Patent Owner present separate and specific arguments for claim 30. *See* PO Resp. 61 (arguing that the dependent claims not specifically addressed are nonobvious because the claims from which they depend are also nonobvious). We adopt the contentions set forth in the Petition and in Mr. Lipoff’s Declaration as mapped to the limitations of the challenged claims as our own findings. *NuVasive*, 841 F.3d at 974.

We now turn to the limitations disputed by Patent Owner.

a) Limitation 29a

Limitation 29a recites “receiving, by at least one application server over a first communication link, a request from at least one communication device, wherein the request comprises packetized voice data.” Ex. 1001, 16:33–36. Petitioner contends, and Patent Owner does not dispute, that the first portion of limitation 29a corresponds to limitation 1b, and the second portion corresponds to limitation 1c2. Pet. 62.

For “receiving, by at last one application server over a first communication link, a request from at least one communication device,” Petitioner relies on its arguments and evidence submitted in connection with limitation 1b. *Id.* (citing Pet. 13–15; Ex. 1021 ¶ 306). And for “wherein the request comprises packetized voice data,” Petitioner relies on its arguments and evidence submitted in connection with limitation 1c2. *Id.* (citing Pet. 17–19; Ex. 1021 ¶ 307). For the reasons explained above in connection with limitations 1b and 1c2, we find that Petitioner persuasively maps the first and second portions of limitation 29a to Gilmore and to the combination of Gilmore and Dhara, respectively. *See supra* § III.E.1.b.2 (limitation 1b); § III.E.1.a (limitation 1c2).

Patent Owner argues that the petition fails to identify an application server that establishes a communication session in response to a request from a communication device. *See* PO Resp. 38–39, 43. Specifically, Patent Owner argues that “since the telephone call of *Gilmore* is not a request as used in the ’816 [p]atent, Element [29a] is not met.” *Id.* at 43 (citing Ex. 2029 ¶ 225). We disagree for the reasons explained above in connection with limitation 1b. *Supra* § III.E.1.b.2.

In particular, we agree with Petitioner’s contention (supported by the testimony of Mr. Lipoff regarding the contemporaneous understanding of

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the ordinarily skilled artisan, which we credit) that “the call to Gilmore’s IVR system is a ‘request’” to establish a communication session because the call “initiates retrieval and execution of the script that establishes the session.” Pet. 15 (citing Ex. 1021 ¶ 95). We also reiterate that Patent Owner’s arguments are unavailing because they are based on an unduly narrow reading of “communication session” as excluding voice telephone calls, which ignore the ’816 patent itself. *Supra* § III.E.1.b.2.b. The written description of the ’816 patent broadly describes client communication devices as encompassing landline phones. Ex. 1001, 6:5–7 (“Landline phones and/or IP phones can also *communicate* with repository 20 and/or application server 24 *in the same manner* as mobile phones.” (emphases added)). Thus, because both the ’816 patent and Gilmore contemplate use of similar communication devices, including landline phones, we do not agree with Patent Owner’s contention that a telephone call in Gilmore cannot qualify as a “request” as recited in limitation 29a.

b) Limitation 29h

Limitation 29h recites “wherein the at least one portion of the second application is maintained in the at least one repository or a database coupled to the at least one repository.” Ex. 1001, 16:53–55. For this limitation, Petitioner relies on its arguments and evidence submitted in connection with limitation 1d and claim 3. Pet. 68. Specifically, Petitioner contends that Gilmore teaches that the at least one portion of the second application (i.e., VoiceXML applications stored in data store 214) is maintained in the at least one repository (i.e., application server 110/210) or coupled to the repository externally. *Id.* (citing Ex. 1005 ¶ 45; Ex. 1021 ¶ 328). Petitioner also contends that, based on the teachings of Dodrill, an ordinarily skilled artisan would have understood that Gilmore’s data store 214 is a “database” as

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claimed, or would have considered the same an obvious modification of Gilmore’s data store. *Id.* (citing Ex. 1021 ¶ 329). Patent Owner argues, as it did with claim 3, that the Petition fails to identify a database of applications. *See* PO Resp. 48. We disagree for the same reasons explained above in connection with claim 3. *See supra* § III.E.2.b.

Specifically, we reiterate that Patent Owner’s argument is premised on an overly narrow interpretation of the term “application,” which we have not adopted. *See supra* § III.C.3. And, because Gilmore’s VoiceXML scripts fall within the scope of an “application,” as recited in the ’816 patent claims, Gilmore’s disclosure of the repository being coupled to a data store satisfies the claim’s recitation of a repository having access to a database. Ex. 1005 ¶ 42 (“The data store 214 is a storage device that stores file necessary for execution of the voice application . . . includ[ing] script files, prompt files, grammar files, and text-to-speech (TTX) text files.”). In any event, even if Gilmore’s data store did not qualify as a database, we also find that Dodrill teaches storing interactive voice applications, such as XML voice applications, in “application [document] database [96].” Ex. 1006, 9:16–24, 12:36–42. Thus, Gilmore, alone or in combination with Dodrill, teaches or suggests limitation 29h.

c) Motivation to combine/reasonable expectation of success

For reasons discussed above as to independent claim 1 and dependent claim 3, we also determine that Petitioner has made a sufficient showing that the references are properly combined for claims 29 and 30, and that an ordinarily skilled artisan would have had a reasonable expectation of success in combining Ladd with Gilmore, Dhara, and Dodrill in the manner proposed by Petitioner. *Supra* § III.E.3. Specifically, Petitioner presents persuasive evidence and arguments, supported by Mr. Lipoff’s testimony

(which we credit), that it would have been obvious to implement Gilmore’s voice/data network 104/204 over the Internet, given that Gilmore expressly teaches that the network may be voice-over IP or other “Internet protocol (IP)-based” network. Ex. 1005 ¶ 31; Ex. 1021 ¶ 325; Pet. 67. Indeed, Ladd confirms that the Internet allows access to a voice-over IP network. Ex. 1016, 9:55–66; *see also* Ex. 1021 ¶¶ 325–326; Pet. 67; *Western Union Co. v. MoneyGram Payment Sys., Inc.*, 626 F.3d 1361, 1370 (Fed. Cir. 2010) (confirming the obviousness of “applying the use of the Internet to existing electronic processes at a time when doing so was commonplace”).

3. Summary

For these reasons, after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 9, 10, 29, and 30 are unpatentable as having been obvious over the combination of Gilmore, Dhara, Dodrill, and Ladd.

I. Ground 8: Obviousness over Gilmore, Dodrill, and Ladd

Petitioner contends that claims 20, 22, 23, and 25–28 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Gilmore, Dodrill, and Ladd. Pet. 71–77. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claims 20, 22, 23, and 25–28 are unpatentable as having been obvious over Gilmore, Dodrill, and Ladd.

1. Limitations of claim 20

Claim 20 is independent, and is directed to an interactive, voice-based communication system. Ex. 1001, 15:30–55. Petitioner contends that Gilmore teaches most limitations of claim 20, except for limitation 20e,

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“which is rendered obvious by Ladd.” Pet. 71 (citing Ex. 1021 ¶¶ 338–339). Petitioner also contends that “Ladd confirms the obviousness” of limitation 20f, while “Dodrill confirms the obviousness” of limitation 20g. *Id.* In response, Patent Owner disputes Petitioner’s showing as to only limitations 20b, 20c, and 20g, which we discuss below. PO Resp. 37, 39, 43, 48.

As to the undisputed limitations of claim 20, we find that Petitioner persuasively maps the limitations of these dependent claims to the cited art (and to the testimony of Mr. Lipoff in support of the combination of references). *See* Pet. 71–74 (citing, for **the preamble**: Ex. 1005, Abstract, ¶¶ 2, 32, 36–37, 39, 49–50; Ex. 1021 ¶ 340; for **limitation 20a**: Ex. 1005, Figs. 1–2, ¶¶ 29, 31 (by reference to limitation 1a); Ex. 1021 ¶¶ 341–342; for **limitation 20d**: Ex. 1005 ¶¶ 30–31, 33–35, 39–48, 50; Ex. 1009 ¶¶ 19, 42 (by reference to claim 6); Ex. 1021 ¶¶ 347–348; for **limitation 20e**: Ex. 1005 ¶¶ 3, 33, 37, 39, 40, 44, 48–50, 70, Figs. 9–14; Ex. 1016, Abstract, Fig. 3, 9:1–26, 9:44–51, 11:30–35, 20:5–10 (by reference to claims 2 and 9); Ex. 1021 ¶ 350; for **limitation 20f**: Ex. 1005 ¶ 31; Ex. 1006, Fig. 1, 3:27–28, 7:60–63, 9:55–68 (by reference to limitation 29g); Ex. 1021 ¶¶ 351–352). Patent Owner does not present separate and specific arguments for these limitations of claim 20. *See generally* PO Resp. We adopt the contentions set forth in the Petition and in Mr. Lipoff’s Declaration as mapped to the limitations of the challenged claims as our own findings. *NuVasive*, 841 F.3d at 974.

We now turn to the limitations disputed by Patent Owner.

a) Limitation 20b

Limitation 20b recites “at least one application server coupled to a first communication link and coupled to a second communication link, the first communication link and the second communication link each

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comprising a data connection data.” Ex. 1001, 15:32–35. Petitioner contends, and Patent Owner does not dispute, that limitation 20b corresponds to limitation 1b. Pet. 72. Thus, for the reasons explained above in connection with limitation 1b, we find that Petitioner persuasively maps the first and second portions of limitation 20b to Gilmore. *See supra* § III.E.1.b.2 (limitation 1b). Patent Owner again argues that the petition fails to identify an application server that establishes a communication session in response to a request from a communication device. *See* PO Resp. 38–39, 43. We again disagree for the reasons explained above in connection with limitation 1b, *supra* § III.E.1.b.2, as well as limitation 29a, *id.* § III.H.2.a.

b) Limitation 20c

Limitation 20c recites “at least one repository coupled to the second communication link, the at least one repository either (a) configured to transmit at least one portion of an application to the at least one application server, or (b) configured to execute the at least one portion of the application.” Ex. 1001, 15:39–43. Petitioner contends, and Patent Owner does not dispute, that the first portion of limitation 20c corresponds to limitation 1d, and the second portion corresponds to limitation 1e. Pet. 72.

For “at least one repository coupled to the second communication link,” Petitioner relies on its arguments and evidence submitted in connection with limitation 1d. *Id.* (citing Pet. 21–23; Ex. 1021 ¶ 345). Specifically, Petitioner contends that Gilmore teaches at least one repository (i.e., application server 110/210) coupled via a second communication link to the voice gateway 108/208. *Id.* at 22 (citing Ex. 1005, Fig. 1). We find that Petitioner’s mapping is supported by the teachings of Gilmore and the testimony of Mr. Lipoff, which we credit. Ex. 1005, Fig. 1; Ex. 1021 ¶ 345.

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We note that Patent Owner does not appear to challenge Petitioner’s showing with respect to this portion of limitation 20c. *See* PO Resp. 37.

For the repository being “either (a) configured to transmit at least one portion of an application to the at least one application server, or (b) configured to execute the at least one portion of the application,” Petitioner relies on its arguments and evidence submitted in connection with limitation 1e. Pet. 72 (citing Pet. 23–26; Ex. 1021 ¶¶ 346). For the reasons explained above in connection with limitation 1e, we find that Petitioner persuasively maps this portion of limitation 20c to Gilmore. *See supra* § III.E.1.b.1 (limitation 1e).

Patent Owner argues that that the Petition fails to show that the repository can be configured to cause the execution of an application via a second communication link, for the same reason the Petition allegedly fails to show that the application server may be configured to cause the execution of an application via a second communication link. *See* PO Resp. 36–37 (arguing that “[t]he Petition fails to show that Gilmore discloses Element[] . . . [20c] for substantially the same reasons”). We reject this argument, however, for the same reasons we rejected Patent Owner’s argument with respect to limitation 1e—that is, because Patent Owner’s argument is premised on an overly narrow interpretation of the term “application.” *See supra* § III.C.3.

We instead find that Petitioner presents persuasive evidence that when Gilmore’s “‘gateway 208 requests a script from the application server 212,’ server 212 ‘processes the script by resolving any DCG [dynamic content generation] commands within the script into voice instructions’ before sending the script to voice gateway 108/208.” Pet. 25 (citing Ex. 1005 ¶ 52). Gilmore further explains that “application server 212 provides the execution

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environment for voice applications” and that “application code executed by the application server 212 coordinates which scripts to send to the voice gateway 208.” Ex. 1005 ¶ 40. Thus, Gilmore confirms that application server 212 may process the scripts before sending the processed scripts to the voice gateway 208, such as by executing DCG commands (which meet the ’032 patent’s definition of “application”) over data connection 112 (second communication link) before receiving the application from application server 212. *Id.* ¶¶ 40, 52. *See also supra* § III.E.1.b.1.a.

Patent Owner’s challenge to Petitioner’s showing regarding limitation 20c, just as with limitation 1e, is premised on Patent Owner’s contention that VoiceXML scripts and DCG commands are not applications. PO Resp. 37. But again, Patent Owner’s arguments are unavailing in part because they are premised on an overly narrow interpretation of the term “application,” which we have not adopted. *See supra* § III.C.3. As we discuss above, we agree with Petitioner that an “application,” within the meaning of the ’816 patent claims, includes “functionality that is capable of facilitating the ability to collect information from and/or present information to one or more client devices or users.” *Id.*; *see* Ex. 1001, 4:45–49. We further agree, as also noted above, that Gilmore’s VoiceXML scripts fall within the scope of an application. We similarly agree that DCG commands fall within the scope of an application, as they are used, for example, to “significantly increase the ability of the scripts to dynamically change in response to different types of callers and in response to different caller inputs.” Ex. 1005 ¶ 52. As such, they facilitate the ability to collect information from and/or present information to one or more client devices or users.

For these reasons, we find that Petitioner has shown by a preponderance of the evidence that Gilmore teaches or suggests the subject matter of limitation 20c.

c) Limitation 20g

Limitation 20g recites “wherein the at least one portion of the application is maintained in the at least one repository or a database coupled to the at least one repository.” Ex. 1001, 15:53–55. For this limitation, Petitioner relies on its arguments and evidence submitted in connection with limitation 1d and claim 3. Pet. 73–74. Specifically, Petitioner contends that Gilmore teaches that the at least one portion of the second application (i.e., VoiceXML applications stored in data store 214) is maintained in the at least one repository (i.e., application server 110/210) or coupled to the repository externally. *Id.* at 73 (citing Ex. 1005 ¶ 45; Ex. 1021 ¶ 353). Petitioner also contends that, based on the teachings of Dodrill, an ordinarily skilled artisan would have understood that Gilmore’s data store 214 is a “database” as claimed, or would have considered the same an obvious modification of Gilmore’s data store. *Id.* at 74 (citing Ex. 1021 ¶ 354). Patent Owner argues, as it did with claim 3, that the Petition fails to identify a database of applications. *See* PO Resp. 48. We disagree for the same reasons explained above in connection with claim 3 and limitation 29h. *See supra* §§ III.E.2.b. (claim 3), III.H.2.b. (limitation 29h). Thus, we find that, Gilmore, alone or in combination with Dodrill, teaches or suggests the subject matter of limitation 20g.

2. Limitations of the dependent claims

Having decided that the combination of Gilmore, Dodrill, and Ladd teaches or suggests each and every limitation of claim 20, we now turn to the remaining challenged claims in this ground of unpatentability—i.e., claims

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22, 23, and 25–28. Claims 22, 23, and 25–28 depend, either directly or indirectly, from claim 20. Ex. 1001, 15:61–16:6, 16:10–29. As such, they also include the above-discussed limitations. Patent Owner presents separate arguments for dependent claims 26, 27, and 28. *See* PO Resp. 48–50. We address those claims individually below.

a) Dependent claims 22, 23, 25

As to claims 22, 23, and 25, we find that Petitioner persuasively maps the limitations of these dependent claims to the cited art (and to the testimony of Mr. Lipoff in support of the combination of references). *See* Pet. 74–75 (citing, for **claim 22**: Ex. 1005 ¶¶ 33, 34, 40, 48, 51; Ex. 1021 ¶¶ 355–361; for **claim 23**: Ex. 1005 ¶¶ 14, 40, 42, 45, 46, 52, 75, Fig. 2 (by reference to limitation 1d); Ex. 1021 ¶¶ 362–364; for **claim 25**: Ex. 1016, 11:48–49, 13:66–67, 14:17–23, 14:28–48 (by reference to claim 10); Ex. 1021 ¶¶ 365–367). Again, Patent Owner does not present separate and specific arguments for any of these dependent claims. *See* PO Resp. 61 (arguing that the dependent claims not specifically addressed are nonobvious because the claims from which they depend are also nonobvious). We adopt the contentions set forth in the Petition and in Mr. Lipoff’s Declaration as mapped to the limitations of the challenged claims as our own findings. *NuVasive*, 841 F.3d at 974.

b) Dependent claims 26 and 28

Dependent claim 26 depends from claim 25, and recites “wherein the communication session further comprises at least one instruction transmitted by the at least one server to the at least one communication device, the instruction comprising a request for processing service.” Ex. 1001, 16:15–19. Claim 28 depends from claim 27, and recites “wherein the at least one application server is configured to transmit a request for processing service

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over the first communication link to the at least one communication device, and wherein the request for processing service comprises an instruction to present a user of the at least one communication device the voice representation.” *Id.* at 16:23–29. Petitioner contends, and Patent Owner does not dispute, that these claims are substantially similar to limitations 1h and 1i. Pet. 76–77. Accordingly, Petitioner relies on its arguments and evidence submitted in connection with limitations 1h and 1i. *Id.* (citing Pet. 31–33; Ex. 1021 ¶¶ 368–370, 374–376). For the reasons explained above in connection with limitations 1h and 1i, we find that Petitioner persuasively maps claims 26 and 28 to the combination of Gilmore and Dodrill. *See supra* § III.E.1.b.3.

Patent Owner argues, as it did with limitations 1h and 1i, that the Petition fails to identify “a request for processing service.” *See* PO Resp. 44, 47–48. We disagree for the same reasons explained above in connection with limitations 1h and 1i. Specifically, we are persuaded by Petitioner’s arguments and evidence that the combination of Gilmore and Dodrill teaches or suggests an application server that communicates a request for processing service to a communication device, as recited in claim 26. In particular, Gilmore teaches the voice gateway generates a voice representation of information derived from executing a VoiceXML application, which it sends as audio prompts to the user communication device. Ex. 1005 ¶¶ 39, 43, 44, 48, 52, 103, Fig. 9. We are also persuaded by Petitioner’s arguments that Dodrill teaches that the user communication device receives the voice representation in software and executing an instruction in software on the user device to play the voice representation as audio for the user, as recited in claim 28. Ex. 1006, 8:18–24, 11:66–12:30, Fig. 7.

c) Dependent claim 27

Dependent claim 27 depends from claim 20, and recites “wherein the text-to-speech application is configured to generate a voice representation of information derived from the application.” Ex. 1001, 16:20–22. Petitioner contends, and Patent Owner does not dispute, that claim 27 is substantially similar to limitation 1g. Pet. 76. Accordingly, Petitioner relies on its arguments and evidence submitted in connection with limitation 1g. *Id.* (citing Pet. 28–31; Ex. 1021 ¶¶ 371–373). For the reasons explained above in connection with limitation 1g, we find that Petitioner persuasively maps claim 27 to the teachings of Gilmore. *See supra* § III.E.1.b.1.c.

Patent Owner argues, as it did with limitation 1g, that the Petition fails to identify “a voice representation of information derived from the application.” *See* PO Resp. 38 (arguing that “[t]he Petition fails to show that *Gilmore* satisfies the language of Element [27] for substantially the same reasons”). We disagree for the same reasons explained above in connection with limitation 1g, and reiterate that we are persuaded by Petitioner’s arguments and evidence that Gilmore’s generation of speech using text-to-speech processing is “a voice representation of information derived from the application,” because Gilmore’s VoiceXML script determines what audio to present based on the application’s instructions (e.g., prompt/grammar) and information in the application, e.g., menu options to speak for a specific user. Ex. 1005 ¶¶ 39, 43–44, 48, 52, 64, 70, 74, 77, 103, Fig. 9; *see also supra* § III.E.1.b.1.c.

3. Motivation to combine/reasonable expectation of success

As noted above, Petitioner relies primarily on Gilmore as disclosing the limitations of the challenged claims, but additionally relies on the teachings of Dodrill or Ladd in combination with Gilmore as to certain

limitations of claim 20—namely, limitation 20e (a speech-to-text application), limitation 20f (the first communication link comprising the Internet), and limitation 20g (application maintained in a repository or a database coupled to the repository). Pet. 71 (citing Ex. 1021 ¶¶ 338–339). Petitioner also relies on the combination of Gilmore, Dodrill, and Ladd for claim 25, *id.* at 75, and Gilmore and Dodrill for claims 26 and 28, *id.* at 76–77.

We determine that Petitioner has also made a sufficient showing that the references are properly combined and that an ordinarily skilled artisan would have had a reasonable expectation of success in combining Gilmore, Dodrill, and Ladd in the manner proposed by Petitioner, for essentially the same reasons articulated above, *supra* §§ III.E.3 (addressing motivation to combine and reasonable expectation of success with respect to the combination of Gilmore and Dodrill), III.H.1 (addressing motivation to combine and reasonable expectation of success with respect to the combination of Gilmore, Dhara, Dodrill, and Ladd), III.H.2.c. (addressing motivation to combine and reasonable expectation of success with respect to the combination of Gilmore and Ladd).

As to the combination with Ladd, we reiterate our determinations that (1) implementing Gilmore’s voice/data network 104/204 over the Internet as explicitly taught by Ladd would have been obvious to the ordinarily skilled artisan, given that Gilmore expressly teaches that the network may be voice-over IP or other “Internet protocol (IP)-based” network (Ex. 1005 ¶ 31; Ex. 1021 ¶ 325) and Ladd confirms that the Internet allows access to a voice-over IP network (Ex. 1016, 9:55–66); and (2) incorporating Ladd’s speech-to-text application and voice-recognition software into Gilmore’s IVR system would have been an obvious modification implemented through the

use of commercially available software, and would have been desirable to add/expand capability and facilitate processing (Ex. 1021 ¶¶ 287–292).

As to the combination of Gilmore and Dodrill, we reiterate our determinations that: (1) Dodrill and Gilmore both describe presenting voice prompts to a user on the user’s device, and incorporating Dodrill’s option of sending the user an executable .wav file that contains instructions to present voice prompts on the user’s computer would have been desirable as adding functionality to Gilmore’s system and reducing server load (Ex. 1021 ¶¶ 151, 163); and (2) databases as taught by Dodrill were well-known as of the priority date of the ’816 patent, and an ordinarily skilled artisan would have understood that using Dodrill’s database as Gilmore’s data store would result in the ordinary and expected operation of storing applications to be retrieved for execution (Ex. 1021 ¶¶ 186–189).

4. Summary

For these reasons, after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that claims 20, 22, 23, and 25–28 are unpatentable as having been obvious over Gilmore, Dodrill, and Ladd.

J. Ground 9: Obviousness over Gilmore, Dodrill, Ladd, and Fawcett

Petitioner contends that claim 24 is unpatentable under 35 U.S.C. § 103(a) over the combination of Gilmore, Dodrill, Ladd, and Fawcett. Pet. 77. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claim 24 is unpatentable as having been obvious over Gilmore, Dhara, Dodrill, and Fawcett.

Claim 24 depends from independent claim 20, and therefore includes the limitations of claim 20, discussed above in connection with Ground 8. *Supra* § III.I. Claim 24 specifies that the first and/or second communication link of claim 20 “further comprise[s] at least one data socket connection.” Ex. 1001, 16:7–9. Petitioner contends that Fawcett discloses a data socket connection, and that “[i]nasmuch as Gilmore discloses that both the first communication link (network 104/204) and the second communication link (network 112/unlabeled in FIG. 2) may be implemented by a TCP/IP network,” then “it would have been obvious to the artisan to implement the first and/or second communication link of Gilmore using at least one data socket connection” as taught by Fawcett. Pet. 77.

We agree with Petitioner. First, Petitioner persuasively maps the limitation of claim 24 to the teachings of Fawcett. *Id.* (citing Pet. 54–55). Specifically, Fawcett shows an IVR system in which “TCP/IP sockets” 56 connect client and server applications. Ex. 1017, Figs. 4–5. Fawcett explains that “a socket is a communication object from which messages are sent and received,” *id.* at 7:35–37, and that communication between a particular client and server application “occurs via a socket identifier allocated to the pair,” *id.* at 8:4–5.

Second, in addition to the reasons we discuss above as to independent claim 20, *supra* § III.I, Petitioner has also made a sufficient showing that the references are properly combined and that an ordinarily skilled artisan would have had a reasonable expectation of success in combining Fawcett with Gilmore, Dhara, and Ladd in the manner proposed by Petitioner. Specifically, Petitioner presents persuasive evidence and arguments, supported by Mr. Lipoff’s testimony (which we credit), that using Fawcett’s data socket connection in Gilmore’s TCP/IP connection would have been

conventional and obvious to an ordinarily skilled artisan. Pet. 55–56 (citing Ex. 1021 ¶¶ 274–275). Indeed, Fawcett shows that data socket connections were “common,” “well known,” and “understood by those skilled in the art” before the ’816 patent. Ex. 1017, 7:35–37, 8:4–9. We agree with Petitioner and Mr. Lipoff that it would have been only a matter of routine and ordinary skill to utilize a data socket connection in Gilmore’s TCP/IP connection, especially given the ordinarily skilled artisan’s familiarity with data socket connections and the “benefit[s] of this architecture” as described by Fawcett. *Id.* at 7:40–54; Pet. 54–55, 77–78; Ex. 1021 ¶¶ 269–274, 377–379.

For these reasons, after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that claim 24 is unpatentable as having been obvious over the combination of Gilmore, Dodrill, Ladd, and Fawcett.

K. Ground 11: Obviousness over Gilmore, Dodrill, Ladd, and Patel

Petitioner contends that claim 21 is unpatentable under 35 U.S.C. § 103(a) over the combination of Gilmore, Dodrill, Ladd, and Patel. Pet. 78–80. Having considered the totality of the arguments and evidence, we find that Petitioner has shown by a preponderance of the evidence that claim 21 is unpatentable as having been obvious over Gilmore, Dodrill, Ladd, and Fawcett.

Claim 21 depends from independent claim 20, and therefore includes the limitations of claim 20, discussed above in connection with Ground 8. *Supra* § III.I. Claim 21 specifies that the application server of claim 20 “is configured to receive, over the first communication link, information originating from the at least one communication device regarding a *stylus input or a touch input*.” Ex. 1001, 15:56–60 (emphasis added). Petitioner

contends that, although Gilmore’s voice gateway 108/208 (application server) is configured to receive information such as a user passcode, PIN, or other number input, Gilmore does not explicitly disclose entering such information via a touch input. Pet. 78–79 (citing Ex. 1021 ¶¶ 382–386). Petitioner points out, however, that Patel expressly discloses a touchscreen user interface for inputting information into an IVR system, and contends that an ordinarily skilled artisan “would have found it obvious to incorporate Patel’s touchscreen inputs into Gilmore’s communication devices.” Pet. 79 (citing Ex. 1007 ¶¶ 14, 17–18; Ex. 1021 ¶¶ 387–388).

We agree with Petitioner. First, Petitioner persuasively maps the limitation of claim 21 to teachings of Patel. *Id.* (citing Ex. 1007 ¶¶ 14, 17–18). Specifically, Patel discloses an IVR system comprising a communication device (e.g., a cell phone, personal computer, or PDA) that “include[] a user interface (e.g., keypad, voice, touch-screen, etc.) that enables the caller to input data” such as “keypad or touch-tone input.” Ex. 1007 ¶ 18.

Second, in addition to the reasons we discuss above as to independent claim 20, *supra* § III.I, Petitioner has also made a sufficient showing that the references are properly combined and that an ordinarily skilled artisan would have had a reasonable expectation of success in combining Patel with Gilmore, Dodrill, and Ladd in the manner proposed by Petitioner. Specifically, Petitioner presents persuasive evidence and arguments, supported by Mr. Lipoff’s testimony (which we credit), that an ordinarily skilled artisan would have been motivated to include a touchscreen input, as taught by Patel, in Gilmore’s communication device, because touchscreen input “permit the user to provide key-based responses, equivalent to a numerical keypad, using touch-based devices,” and thus “expand the

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availability of response options and increase compatibility with more devices.” Pet. 79 (citing Ex. 1021 ¶ 390). We further agree with Petitioner and Mr. Lipoff that “touch inputs, e.g., touchscreens that respond to finger or stylus inputs, were conventional devices,” *id.* (citing Ex. 1007 ¶ 18), and, accordingly, implementing touch inputs for Gilmore’s communication device would have involved “only the known application of conventional technologies operating in the ordinary and predictable manner,” *id.* (citing Ex. 1021 ¶¶ 392–393).

For these reasons, after having analyzed the entirety of the record and assigning appropriate weight to the cited supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that claim 21 is unpatentable as having been obvious over the combination of Gilmore, Dodrill, Ladd, and Patel.

IV. CONCLUSION¹⁸

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–6, 11–13	103(a)	Gilmore, Dhara, Dodrill	1–6, 11–13	
14, 16	103(a)	Gilmore, Creamer		14, 16
15	103(a)	Gilmore, Creamer,		15

¹⁸ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

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Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
		Dhara		
7, 8	103(a)	Gilmore, Dhara, Dodrill, Creamer	7, 8	
17	103(a)	Gilmore, Creamer, Fawcett		17
18	103(a)	Gilmore, Creamer, Dodrill		18
9, 10, 29, 30	103(a)	Gilmore, Dhara, Dodrill, Ladd	9, 10, 29, 30	
20, 22, 23, 25–28	103(a)	Gilmore, Dodrill, Ladd	20, 22, 23, 25–28	
24	103(a)	Gilmore, Dodrill, Ladd, Fawcett	24	
19	103(a)	Gilmore, Creamer, Dodrill, Ladd		19
21	103(a)	Gilmore, Dodrill, Ladd, Patel	21	
Overall Outcome			1–13, 20–30	14–19

V. ORDER

Accordingly, it is

ORDERED that claims 1–13 and 20–30 of U.S. Patent No. 10,270,816 B1 are held unpatentable under 35 U.S.C. § 103 as obvious;

ORDERED that claims 14–19 of U.S. Patent No. 10,270,816 B1 are not held unpatentable under 35 U.S.C. § 103 as obvious; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of this decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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